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**CONTRACT DOCUMENTS  
FOR WETLAND ENHANCEMENTS  
TO IMPROVE THE WATER QUALITY  
OF HAMILTON LAKE**

**August 1999**

**Prepared for:**

**Hamilton Lake Association, Inc.  
P.O. Box 515  
Hamilton, IN 46742**

**Prepared by:**

**Harza Engineering Company**

Property of  
Lake and River Enhancement Section  
Division of Fish and Wildlife/IDNR  
402 W. Washington Street, W-273  
Indianapolis, IN 46204

**HAMILTON LAKE WETLAND ENHANCEMENT PROJECT  
CONTRACT DOCUMENTS**

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**Hamilton Lake Association  
Wetland Structure**

**PART 1 - INSTRUCTIONS TO BIDDERS**

**1.01 TIME AND PLACE FOR RECEIPT OF BIDS**

Sealed Bids will be received by the Hamilton Lake Association, Inc. ("Owner") P. O. Box 515, Hamilton, Indiana 46742 until \_\_\_\_\_ for the Hamilton Lake Wetland Enhancement project on Haughey Ditch, at which time and place all Bids will be publicly opened and read.

The Bidder may, without prejudice to himself, withdraw, modify, or correct a proposal after it has been deposited with the Owner, provided the request for such withdrawal, modification, or correction is filed with the Owner in writing or by fax before the time set for opening bids. The original bid, as modified by such written or faxed communication, will be considered as the proposal submitted by the Bidder. No Bidder shall withdraw his bid after the hour set for the opening until and unless the award of the Contract is delayed for a period of more than 90 calendar days from the date of opening.

**1.02 QUALIFICATION OF BIDDERS**

The Bidder shall submit information in accordance with Section 2.3, Statement of Qualifications, to establish that he has satisfactorily performed work comparable to that required by these Contract Documents.

In addition to the information and data to be furnished with the Bid, each Bidder shall be prepared to furnish to the Owner, on request, any further information considered necessary to establish his qualifications and financial ability to carry out the Contract properly.

**1.03 ISSUING OF CONTRACT DOCUMENTS**

Two complete sets of the Contract Documents and one extra copy of the Bid Forms will be furnished to each Bidder upon payment of a fee of \$50.00. The fee is refundable if the Contract Documents are returned to the Hamilton Lake Association immediately after the opening of bids, and in good condition. A request for Contract Documents shall be made to:

Hamilton Lake Association, Inc.  
P.O. Box 515  
Hamilton, IN 46742

Bidders desiring additional sets of the Contract Documents may obtain them upon payment of \$25.00 per set. Requests shall be made to the Owner accompanied by payment to the Owner, which payment will not be refundable. Such payment may be made by cash, cashier's check or bank draft.

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The Contract Documents are available for examination in the offices of the Engineer. The Engineer's address is as follows:

Harza Engineering Company  
Sears Tower  
233 South Wacker Drive  
Chicago, IL 60606

Attention: David Pott

**1.04 BIDDER'S UNDERSTANDING**

The Bidder shall visit the Site and, by careful examination, satisfy himself as to the nature and location of the Work; the conformation of the ground; the character and quality of both the surface and subsurface materials to be encountered; the location and condition of existing utilities and roads; the type of equipment and facilities needed preliminary to and during the prosecution of the Work; the general and local conditions including wage scales, labor regulations, legal matters, ordinances, rules, and regulations pertaining to the Work; and all other matters which can in any way affect the Work under the Contract. No verbal agreement or conversation with any officer, agent, or employee of the Owner or of the Engineer, either before or after the execution of the Contract, will affect or modify any of the terms or obligations herein contained.

CONTRACTOR IS HEREBY NOTIFIED THAT THE SITE VISIT IS MANDATORY. The bid will not be considered if the responsible bidder fails to visit the site of work at the time and date indicated in Section 1.10.

**1.05 INTERPRETATION OF CONTRACT DOCUMENTS BEFORE BIDS ARE RECEIVED**

If any person contemplating submitting a bid for the Work covered by the Contract is in doubt as to the meaning of any part of the Contract Documents, he should at once notify the Engineer and request clarification prior to submitting his bid. All interpretations of the Contract Documents will be made only by formal addenda issued by the Engineer under authorization of the Owner. The Owner will not be responsible for any interpretation.

**1.06 ADDENDA**

Addenda to the Contract Documents may be issued prior to the date of opening bids to clarify the Contract Documents or to reflect modifications in the design or Contract terms. Each addendum issued will be distributed to each person or organization to whom the Contract Documents have been issued. The recipient shall acknowledge receipt of each addendum by signing and returning the receipt form distributed with the addendum. All addenda issued become a part of the Contract Documents.

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**1.07 BIDS**

Bids will be considered on the items shown in Section 2.2, Schedule of Prices, but no bid will be considered for a portion of the schedule. The Schedule of Prices has an entry for each item on which payment will be made, and no other allowance of any kind will be made unless specifically provided for in the Contract Documents. The quantities shown in the Schedule of Prices are only estimates for the purpose of comparison of Bids and determining the Contract Amount and the amount of the proposal guarantee.

Bids shall be submitted on Part 2, Bid Forms. The Bid Forms shall not be detached from the accompanying Contract Documents, and one copy of all addenda shall be attached to the bid. When submitted Bids shall be enclosed in double sealed envelopes. Both inner and outer envelopes shall be marked as follows:

SEALED BID:

Hamilton Lake Association, Inc.  
Hamilton Lake Wetland Enhancement Project  
P.O. Box 515  
Hamilton, IN 46742

In complying with the requirements relating to the submission of bids in duplicate, the following procedure shall be followed: one copy of the complete Contract Documents including all addenda shall be properly executed and submitted, marked "original," and will be considered the original. In addition, 1 extra complete copy of Part 2, Bid Forms, shall be properly executed and submitted. In case of a discrepancy between copies, the original will govern.

**1.08 RIGHT TO REJECT BIDS**

The Owner reserves the right to reject any or all bids, to waive any information or requirement in bids received, and to accept any bid considered advantageous to the Owner.

**1.09 PROPOSAL GUARANTEE**

To insure that a Contract will be executed, if the bid is accepted, each bid shall be accompanied by a proposal guarantee in the amount of 10% of the total amount bid, consisting of a bid bond cashier's check or bank draft. No bid will be considered unless accompanied by the proposal guarantee. If the Successful Bidder fails to enter into a Contract in accordance with these Contract Documents within 14 calendar days from the date on which he receives a contract from the Owner, the full amount of proposal guarantee will be retained by the Owner as a compensation for failure to execute the Contract inasmuch as the actual loss to the Owner is difficult to ascertain. The proposal guarantee of the Successful Bidder will be returned without interest as soon as possible after the Successful Bidder signs the Contract and furnishes the performance bond.

**1.10 ASSISTANCE IN VIEWING THE SITE OF THE WORK**

A mandatory site visit for all bidders is scheduled for \_\_\_\_\_. The Owner's representative will be present to review the project and address any questions that arise at that time.

**1.11 EVALUATION OF BIDS**

The Contract will be awarded to the qualified Bidder presenting the lowest evaluated bid responsive to the requirements, considering all the items requested in the Schedule of Prices but excluding any Alternative Bids submitted. Alternative Bids submitted by the Bidder will be considered only if his Base Bid is determined to be the lowest evaluated bid as outlined herein. The Owner reserves the right to award the Contract to the lowest Bidder based on either of the two total bid prices submitted, whichever is more convenient to the Owner. Any bid which does not include both total bid prices will be considered nonresponsive and will not be accepted.

Prime consideration will be given to securing for the Owner the lowest total cost for the Work.

**1.12 AWARD OF CONTRACT**

Award of Contract will be made to the Successful Bidder within 90 days from the date of opening of Bids, unless all Bids are rejected.

The Successful Bidder shall execute and return the Contract within 14 days after receipt of it for signing. Upon receiving the signed Contract, along with the required certificates of insurance and performance and payment bonds, the Owner will sign and return one executed copy of the Contract and a Notice to Proceed to the Contractor within 14 days.

If the award is made to a corporation, the corporation shall furnish evidence of its corporate existence, of its right to do business in the State of Indiana, and of the authority of the officers signing the Contract.

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**PART 2 - BID FORMS**

**2.1 PROPOSAL**

Hamilton Lake Association, Inc.  
P.O. Box 515  
Hamilton, IN 46742

In accordance with the Contract Documents dated \_\_\_\_\_, \_\_\_\_\_, the undersigned, as a Bidder, hereby proposes to furnish all plant, labor, equipment, and materials and will do all things necessary to construct the Hamilton Lake Wetland Structure for the prices set forth in Section 2.2, Schedule of Prices, and agrees that if written notice of award of the Contract is received, within 90 calendar days after the date of opening of bids, he will execute the Contract as required by the Contract Documents at the time the Contract is executed. Cashier's check or bank draft as required by the Contract Documents is attached. The undersigned further agrees that, if this proposal is accepted, and if he should fail to execute the Contract within 14 calendar days from the date of which he is notified that he is the Successful Bidder to whom the Contract is awarded, the cashier's check or bank draft accompanying this proposal and the moneys payable thereon shall be paid into the funds of the Owner as agreed liquidated damages for such failure; otherwise, the cashier's check or bank draft shall be returned to the successful Bidder upon signing the Contract and furnishing the Performance Bond and Payment Bond.

The undersigned hereby acknowledges having received a full set of the Contract Documents and Addenda Nos. \_\_\_\_\_. (None unless indicated.)

\_\_\_\_\_  
Full Name of Bidder - Typewritten

\_\_\_\_\_  
Witness to Signature

By \_\_\_\_\_  
Signature

\_\_\_\_\_  
Name - Typewritten

\_\_\_\_\_  
Name and Address - Typewritten

\_\_\_\_\_

\_\_\_\_\_  
Business Address - Typewritten

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**2.2 SCHEDULE OF PRICES HAMILTON LAKE WETLAND STRUCTURE**

No.	Item	Estimated Quantity	Unit	Unit Price	Total Price
1	Mobilization	All	-	Lump Sum	\$
2	Clearing and Grubbing	0.5	Acres	\$ /ac	\$
3	Excavation	60	yd <sup>3</sup>	\$ /yd <sup>3</sup>	\$
4	Steel Sheet Pile	750	ft <sup>2</sup>	\$ /ft <sup>2</sup>	\$
5	Rip Rap	45	yd <sup>3</sup>	\$ / yd <sup>3</sup>	\$
6	Filter Fabric	70	yd <sup>2</sup>	\$ / yd <sup>2</sup>	\$
7	Surveying	All	-	Lump Sum	\$
8	Dewatering of Work Areas	All	-	Lump Sum	\$
9	Landscaping and Restoration	All	-	Lump Sum	\$
10	Demobilization	All	-	Lump Sum	\$
<b>CONTRACT PRICE</b>					<b>\$</b>

\_\_\_\_\_  
COMPANY NAME OF BIDDER

\_\_\_\_\_  
SIGNATURE OF AUTHORIZED COMPANY REPRESENTATIVE



## 2.3 STATEMENT OF QUALIFICATIONS

(Reference 1.02 Qualification of Bidders)

### 2.3-01 GENERAL

The following statements as to experience and financial qualifications of the Bidder are submitted with the proposal, as a part thereof, and the Bidder warrants that all these statements are true and correct.

### 2.3-02 BIDDER'S INFORMATION

- A. Bidder's organization has been in business under its present business name for \_\_\_\_\_ years, from \_\_\_\_\_.
- B. Bidder's organization has had experience in work comparable with that required under the proposed contract:
- as a prime contractor \_\_\_\_\_ years;
- as a subcontractor \_\_\_\_\_ years.
- C. Work similar in character to that required in the proposed Contract which Bidder's organization has completed as a prime contractor:

Year	Type and Location of Work	For Whom Performed	Contract Amount

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D. Bidder refers to the following for information concerning work listed in 2.3-02 C:

Name and Title	Address	Telephone

**2.3-03 BANKING REFERENCES**

Reference is hereby made to the following bank or banks as to the financial responsibility of the Bidder:

<u>Name of Bank</u>	<u>Address</u>
_____	_____
_____	_____

**2.3-04 SURETY REFERENCES**

References is hereby made to the following surety company or companies as to the financial responsibility and general reliability of the Bidder:

Name of Surety Company	_____
Address	_____
Name of Surety Company	_____
Address	_____

## **2.4 CONSTRUCTION METHOD STATEMENT**

Bidder is to insert or attach full description of his proposed method for performing the work.

**Hamilton Lake Association  
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**PART 3 - PERFORMANCE AND PAYMENT BOND FORMS**

**3.1 PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS, That \_\_\_\_\_ of \_\_\_\_\_  
\_\_\_\_\_, a Corporation/Partnership/Individual,  
herein after called "Principal", and \_\_\_\_\_ of \_\_\_\_\_  
\_\_\_\_\_ herein after  
called "Surety", are held and firmly bound unto the Hamilton Lake Association, Inc. P.O. Box 515,  
Hamilton, Indiana 46742 hereinafter called "Owner", in the penal sum of \_\_\_\_\_  
\_\_\_\_\_ dollars, (\$\_\_\_\_\_) in lawful money of the United States, for the  
payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and  
severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain  
contract with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_, 199\_\_\_\_, a copy of which is  
hereto attached and made a part hereof for the construction of the Hamilton Lake Wetland Structure.

NOW, THEREFORE, if the Principal herein shall well, truly and faithfully perform its duties, all the  
undertakings, covenants, terms, conditions, and agreements of said contract during the original term  
thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the  
Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred  
under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages  
which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and  
expense which the Owner may incur in making good any default, then this obligation shall be void; other-  
wise it shall remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no  
change, extension of time, alteration, or addition to the terms of the contract or to the WORK to be  
performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its  
obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration  
or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the  
right of any beneficiary hereunder, whose claim may be unsatisfied.

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IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_\_ counterparts, each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(SEAL)

Principal

By

Name and Title

ATTEST:

\_\_\_\_\_  
Name and Title

\_\_\_\_\_  
Surety

By

\_\_\_\_\_  
Name and Title

ATTEST:

\_\_\_\_\_  
Name and Title

Note: Date of BOND must not be prior to date of Contract. If Contractor is Partnership, all Partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in Indiana.

**Hamilton Lake Association  
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**3.2 PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS, That \_\_\_\_\_ of \_\_\_\_\_  
\_\_\_\_\_ a Corporation/Partnership/Individual,  
herein after called "Principal", and \_\_\_\_\_ of \_\_\_\_\_  
\_\_\_\_\_ herein after called "Surety", are held and firmly bound unto the Hamilton Lake Association, Inc. P.O Box  
515, Hamilton, Indiana 46742, hereinafter called "Owner", in the penal sum of \_\_\_\_\_  
\_\_\_\_\_ dollars, (\$ \_\_\_\_\_) in lawful money of the United States, for the  
payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and  
severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain  
contract with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, a copy of which is  
hereto attached and made a part hereof for the construction of the Hamilton Lake Wetland Structure.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCON-  
TRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK  
provided for in such contract, and any authorized extension or modification thereof, including all amounts  
due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools,  
consumed or used in connection with the construction of such WORK, and all insurance premiums on said  
WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise, then  
this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no  
change, extension of time, alteration, or addition to the terms of the contract or to the WORK to be  
performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its  
obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration  
or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the  
right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_\_ counterparts, each one of which shall be  
deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(SEAL)

Principal \_\_\_\_\_

By \_\_\_\_\_

Name and Title \_\_\_\_\_

ATTEST:

**Hamilton Lake Association  
Wetland Structure**

\_\_\_\_\_

\_\_\_\_\_  
Name and Title

\_\_\_\_\_  
Surety

By

\_\_\_\_\_  
Name and Title

ATTEST:

\_\_\_\_\_

\_\_\_\_\_  
Name and Title

Note: Date of BOND must not be prior to date of Contract. If Contractor is Partnership, all Partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in Indiana.

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**PART 4 - AGREEMENT**

THIS AGREEMENT, made this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by and between the Hamilton Lake Association, Inc., P.O. Box 515 Hamilton, Indiana 46742, hereinafter called "Owner" and \_\_\_\_\_ doing business as an individual/partnership/corporation hereinafter called "Contractor".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The Contractor will commence and complete the construction of the Hamilton Lake Wetland Structure at Hamilton, Indiana.

2. The Contractor will furnish all of the materials, suppliers, tools, equipment, labor, and other services necessary for the construction and completion of the Project described herein.

3. The Contractor will commence the work required by the Contract Documents within \_\_\_\_\_ calendar days after the date of the Notice to Proceed and will complete the same within \_\_\_\_\_ calendar days unless the period for completion is extended otherwise by the Contract Documents.

4. The Contractor agrees to perform all of the Work described in the Contract Documents and comply with the terms therein for the sum of \$ \_\_\_\_\_, or as shown in the Schedule of Prices.

5. The term "Contract Documents" means and includes the following:

- A. Instructions for Bidders
- B. Bid Forms
- C. Performance Bond
- D. Payment Bond
- E. Agreement
- F. General Conditions
- G. Supplemental General Conditions
- H. Notice to Proceed
- I. Change Order
- J. Specifications
- K. Exploration and Testing Information
- L. Drawings prepared by Harza Engineering Company numbered 15087-01, and 15087-02 and dated August 1999

M. Addenda:

No. \_\_\_\_\_, dated \_\_\_\_\_, \_\_\_\_\_  
No. \_\_\_\_\_, dated \_\_\_\_\_, \_\_\_\_\_  
No. \_\_\_\_\_, dated \_\_\_\_\_, \_\_\_\_\_

6. The Owner will pay to the Contractor in the manner and at such times as set forth in the General Conditions such amounts as required by the Contract Documents.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESSETH WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in duplicate each of which shall be deemed an original on the date first above written.

Owner:



**Hamilton Lake Association  
Wetland Structure**

Hamilton Lake Association, Inc., Hamilton, Indiana

By: \_\_\_\_\_

\_\_\_\_\_  
Name and Title

(SEAL)  
ATTEST:

\_\_\_\_\_

\_\_\_\_\_  
Name and Title

Contractor:

\_\_\_\_\_

By: \_\_\_\_\_

\_\_\_\_\_  
Name and Title

\_\_\_\_\_  
Address

(SEAL)  
ATTEST:

\_\_\_\_\_

\_\_\_\_\_  
Name and Title

PART 4A – NOTICE TO PROCEED

To: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date: \_\_\_\_\_

You are hereby notified to commence work in accordance with the AGREEMENT dated \_\_\_\_\_  
And you are to complete the work before \_\_\_\_\_.

PART 5 - CHANGE ORDER

Order No. \_\_\_\_\_

Date: \_\_\_\_\_

Agreement Date: \_\_\_\_\_

Owner: Hamilton Lake Association, Inc., Hamilton, Indiana

Contractor: \_\_\_\_\_

The following changes are hereby made to the Contract Documents: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Justification: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Change to the Contract Price:

Original Contract Price: \$ \_\_\_\_\_

Current Contract Price adjusted by previous Change Order \$ \_\_\_\_\_

The Contract Price due to this Change Order will be \$ \_\_\_\_\_

The new Contract Price including this Change Order will be \$ \_\_\_\_\_

Change to Contract Time:

The Contract Time will be \_\_\_\_\_ by \_\_\_\_\_ calendar days.

The date for completion of all work will be \_\_\_\_\_.

Approvals Required:

Requested by: \_\_\_\_\_

Recommended by: \_\_\_\_\_

Ordered by: \_\_\_\_\_

Accepted by: \_\_\_\_\_

## PART 6 - GENERAL CONDITIONS

## GENERAL CONDITIONS

1. Definitions
2. Additional Instructions and Detail Drawings
3. Schedules, Reports and Records
4. Drawings and Specifications
5. Shop Drawings
6. Materials, Services and Facilities
7. Inspection and Testing
8. Substitutions
9. Patents
10. Surveys, Permits, Regulations
11. Protection of Work, Property, Persons
12. Supervision by Contractor
13. Changes in the Work
14. Changes in Contract Price
15. Time for Completion and Liquidated Damages
16. Correction of Work
17. Subsurface Conditions
18. Suspension of Work, Termination and Delay
19. Payments to Contractor
20. Acceptance of Final Payment as Release
21. Insurance
22. Contract Security
23. Assignments
24. Indemnification
25. Separate Contracts
26. Subcontracting
27. Engineer's Authority
28. Land and Rights-of-Way
29. Guaranty
30. Arbitration
31. Taxes

### 1. DEFINITIONS

- 1.1 Wherever used in the CONTRACT DOCUMENTS, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:
  - 1.2 ADDENDA—Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the CONTRACT DOCUMENTS, DRAWINGS and SPECIFICATIONS, by additions, deletions, clarifications or corrections.
  - 1.3 BID—The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the WORK to be performed.
  - 1.4 BIDDER—Any person, firm or corporation submitting a BID for the WORK.
  - 1.5 BONDS—Bid, Performance, and Payment Bonds and other instruments of security, furnished by the CONTRACTOR and his surety in accordance with the CONTRACT DOCUMENTS.
  - 1.6 CHANGE ORDER—A written order to the CONTRACTOR authorizing an addition, deletion or revision in the WORK within the general scope of the CONTRACT DOCUMENTS, or authorizing an adjustment in the CONTRACT PRICE or CONTRACT TIME.
  - 1.7 CONTRACT DOCUMENTS—The contract, including Advertisement For Bids, Information For Bidders, BID, Bid Bond, Agreement, Payment Bond, Performance Bond, NOTICE OF AWARD, NOTICE TO PROCEED, CHANGE ORDER, DRAWINGS, SPECIFICATIONS, and ADDENDA.
  - 1.8 CONTRACT PRICE—The total monies payable to the CONTRACTOR under the terms and conditions of the CONTRACT DOCUMENTS.
  - 1.9 CONTRACT TIME—The number of calendar days stated in the CONTRACT DOCUMENTS for the completion of the WORK.
  - 1.10 CONTRACTOR—The person, firm or corporation with whom the OWNER has executed the Agreement.
  - 1.11 DRAWINGS—The part of the CONTRACT DOCUMENTS which show the characteristics and scope of the WORK to be performed and which have been prepared or approved by the ENGINEER.
  - 1.12 ENGINEER—The person, firm or corporation named as such in the CONTRACT DOCUMENTS.
  - 1.13 FIELD ORDER—A written order effecting a change in the WORK not involving an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, issued by the ENGINEER to the CONTRACTOR during construction.
  - 1.14 NOTICE OF AWARD—The written notice of the acceptance of the BID from the OWNER to the successful BIDDER.
  - 1.15 NOTICE TO PROCEED—Written communication issued by the OWNER to the CONTRACTOR authorizing him to proceed with the WORK and establishing the date of commencement of the WORK.
  - 1.16 OWNER—A public or quasi-public body or authority, corporation, association, partnership, or individual for whom the WORK is to be performed.
  - 1.17 PROJECT—The undertaking to be performed as provided in the CONTRACT DOCUMENTS.
  - 1.18 RESIDENT PROJECT REPRESENTATIVE—The authorized representative of the OWNER who is assigned to the PROJECT site or any part thereof.
  - 1.19 SHOP DRAWINGS—All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a SUBCONTRACTOR, manufacturer, SUPPLIER or distributor, which illustrate how specific portions of the WORK shall be fabricated or installed.
  - 1.20 SPECIFICATIONS—A part of the CONTRACT DOCUMENTS consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.
  - 1.21 SUBCONTRACTOR—An individual, firm or corporation having a direct contract with the CONTRACTOR or with any other SUBCONTRACTOR for the performance of a part of the WORK at the site.
  - 1.22 SUBSTANTIAL COMPLETION—That date as certified by the ENGINEER when the construction of the PROJECT or a specified part thereof is sufficiently completed, in accordance with the CONTRACT DOCUMENTS, so that the PROJECT or specified part can be utilized for the purposes for which it is intended.
  - 1.23 SUPPLEMENTAL GENERAL CONDITIONS—

Modifications to General Conditions required by a Federal agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS, or such requirements that may be imposed by applicable state laws.

**1.24 SUPPLIER**—Any person or organization who supplies materials or equipment for the WORK, including that fabricated to a special design, but who does not perform labor at the site.

**1.25 WORK**—All labor necessary to produce the construction required by the CONTRACT DOCUMENTS, and all materials and equipment incorporated or to be incorporated in the PROJECT.

**1.26 WRITTEN NOTICE**—Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the WORK.

## **2. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS**

**2.1** The CONTRACTOR may be furnished additional instructions and detail drawings, by the ENGINEER, as necessary to carry out the WORK required by the CONTRACT DOCUMENTS.

**2.2** The additional drawings and instruction thus supplied will become a part of the CONTRACT DOCUMENTS. The CONTRACTOR shall carry out the WORK in accordance with the additional detail drawings and instructions.

## **3. SCHEDULES, REPORTS AND RECORDS**

**3.1** The CONTRACTOR shall submit to the OWNER such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the CONTRACT DOCUMENTS for the WORK to be performed.

**3.2** Prior to the first partial payment estimate the CONTRACTOR shall submit construction progress schedules showing the order in which he proposes to carry on the WORK, including dates at which he will start the various parts of the WORK, estimated date of completion of each part and, as applicable:

**3.2.1.** The dates at which special detail drawings will be required; and

**3.2.2** Respective dates for submission of SHOP DRAWINGS, the beginning of manufacture, the testing and the installation of materials, supplies and equipment.

**3.3** The CONTRACTOR shall also submit a schedule of payments that he anticipates he will earn during the course of the WORK.

## **4. DRAWINGS AND SPECIFICATIONS**

**4.1** The intent of the DRAWINGS and SPECIFICATIONS is that the CONTRACTOR shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the WORK in accordance with the CONTRACT DOCUMENTS and all incidental work necessary to complete the PROJECT in an acceptable manner, ready for use, occupancy or operation by the OWNER.

**4.2** In case of conflict between the DRAWINGS and SPECIFICATIONS, the SPECIFICATIONS shall govern. Figure dimensions on DRAWINGS shall govern over scale dimensions, and detailed DRAWINGS shall govern over general DRAWINGS.

**4.3** Any discrepancies found between the DRAWINGS and SPECIFICATIONS and site conditions or any inconsistencies or ambiguities in the DRAWINGS or SPECIFICATIONS shall be immediately reported to the ENGINEER, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. WORK done by the CONTRACTOR after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the CONTRACTOR'S risk.

## **5. SHOP DRAWINGS**

**5.1** The CONTRACTOR shall provide SHOP DRAWINGS as may be necessary for the prosecution of the WORK as required by the CONTRACT DOCUMENTS. The ENGINEER shall promptly review all SHOP DRAWINGS. The ENGINEER'S approval of any SHOP DRAWING shall not release the CONTRACTOR from responsibility for deviations from the CONTRACT DOCUMENTS. The approval of any SHOP DRAWING which substantially deviates from the requirement of the CONTRACT DOCUMENTS shall be evidenced by a CHANGE ORDER.

**5.2** When submitted for the ENGINEER'S review, SHOP DRAWINGS shall bear the CONTRACTOR'S certification that he has reviewed, checked and approved the SHOP DRAWINGS and that they are in conformance with the requirements of the CONTRACT DOCUMENTS.

**5.3** Portions of the WORK requiring a SHOP DRAWING or sample submission shall not begin until the SHOP DRAWING or submission has been approved by the ENGINEER. A copy of each approved SHOP DRAWING and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

## **6. MATERIALS, SERVICES AND FACILITIES**

**6.1** It is understood that, except as otherwise specifically stated in the CONTRACT DOCUMENTS, the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the WORK within the specified time.

**6.2** Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the WORK. Stored materials and equipment to be incorporated in the WORK shall be located so as to facilitate prompt inspection.

**6.3** Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

**6.4** Materials, supplies and equipment shall be in accordance with samples submitted by the CONTRACTOR and approved by the ENGINEER.

**6.5** Materials, supplies or equipment to be incorporated into the WORK shall not be purchased by the

CONTRACTOR or the SUBCONTRACTOR subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

## 7. INSPECTION AND TESTING

7.1 All materials and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

7.2 The OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS.

7.3 The CONTRACTOR shall provide at his expense the testing and inspection services required by the CONTRACT DOCUMENTS.

7.4 If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any WORK to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing or approval.

7.5 Inspections, tests or approvals by the engineer or others shall not relieve the CONTRACTOR from his obligations to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

7.6 The ENGINEER and his representatives will at all times have access to the WORK. In addition, authorized representatives and agents of any participating Federal or state agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The CONTRACTOR will provide proper facilities for such access and observation of the WORK and also for any inspection, or testing thereof.

7.7 If any WORK is covered contrary to the written instructions of the ENGINEER it must, if requested by the ENGINEER, be uncovered for his observation and replaced at the CONTRACTOR'S expense.

7.8 If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such WORK is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such WORK is not found to be defective, the CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate CHANGE ORDER shall be issued.

## 8. SUBSTITUTIONS

8.1 Whenever a material, article or piece of equip-

ment is identified on the DRAWINGS or SPECIFICATIONS by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the PROJECT will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

## 9. PATENTS

9.1 The CONTRACTOR shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and save the OWNER harmless from loss on account thereof, except that the OWNER shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified, however if the CONTRACTOR has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the ENGINEER.

## 10. SURVEYS, PERMITS, REGULATIONS

10.1 The OWNER shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the WORK together with a suitable number of bench marks adjacent to the WORK as shown in the CONTRACT DOCUMENTS. From the information provided by the OWNER, unless otherwise specified in the CONTRACT DOCUMENTS, the CONTRACTOR shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations and other working points, lines, elevations and cut sheets.

10.2 The CONTRACTOR shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

10.3 Permits and licenses of a temporary nature necessary for the prosecution of the WORK shall be secured and paid for by the CONTRACTOR unless otherwise stated in the SUPPLEMENTAL GENERAL CONDITIONS. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the OWNER, unless otherwise specified. The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the WORK as drawn and specified. If the CONTRACTOR

observes that the CONTRACT DOCUMENTS are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in Section 13, CHANGES IN THE WORK.

#### 11. PROTECTION OF WORK, PROPERTY AND PERSONS

11.1 The CONTRACTOR will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the WORK and other persons who may be affected thereby, all the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

11.2 The CONTRACTOR will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the WORK, all necessary safeguards for safety and protection. He will notify owners of adjacent utilities when prosecution of the WORK may affect them. The CONTRACTOR will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the CONTRACTOR, any SUBCONTRACTOR or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the CONTRACT DOCUMENTS or to the acts or omissions of the OWNER or the ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the CONTRACTOR.

11.3 In emergencies affecting the safety of persons or the WORK or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the ENGINEER or OWNER, shall act to prevent threatened damage, injury or loss. He will give the ENGINEER prompt WRITTEN NOTICE of any significant changes in the WORK or deviations from the CONTRACT DOCUMENTS caused thereby, and a CHANGE ORDER shall thereupon be issued covering the changes and deviations involved.

#### 12. SUPERVISION BY CONTRACTOR

12.1 The CONTRACTOR will supervise and direct the WORK. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR will employ and maintain on the WORK a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the WORK.

#### 13. CHANGES IN THE WORK

13.1 The OWNER may at any time, as the need arises,

order changes within the scope of the WORK without invalidating the Agreement. If such changes increase or decrease the amount due under the CONTRACT DOCUMENTS, or in the time required for performance of the WORK, an equitable adjustment shall be authorized by CHANGE ORDER.

13.2 The ENGINEER, also, may at any time, by issuing a FIELD ORDER, make changes in the details of the WORK. The CONTRACTOR shall proceed with the performance of any changes in the WORK so ordered by the ENGINEER unless the CONTRACTOR believes that such FIELD ORDER entitles him to a change in CONTRACT PRICE or TIME, or both, in which event he shall give the ENGINEER WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter the CONTRACTOR shall document the basis for the change in CONTRACT PRICE or TIME within thirty (30) days. The CONTRACTOR shall not execute such changes pending the receipt of an executed CHANGE ORDER or further instruction from the OWNER.

#### 14. CHANGES IN CONTRACT PRICE

14.1 The CONTRACT PRICE may be changed only by a CHANGE ORDER. The value of any WORK covered by a CHANGE ORDER or of any claim for increase or decrease in the CONTRACT PRICE shall be determined by one or more of the following methods in the order of precedence listed below:

- (a) Unit prices previously approved.
- (b) An agreed lump sum.
- (c) The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work. In addition there shall be added an amount to be agreed upon but not to exceed fifteen (15) percent of the actual cost of the WORK to cover the cost of general overhead and profit.

#### 15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

15.1 The date of beginning and the time for completion of the WORK are essential conditions of the CONTRACT DOCUMENTS and the WORK embraced shall be commenced on a date specified in the NOTICE TO PROCEED.

15.2 The CONTRACTOR will proceed with the WORK at such rate of progress to insure full completion within the CONTRACT TIME. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the CONTRACT TIME for the completion of the WORK described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the WORK.

15.3 If the CONTRACTOR shall fail to complete the WORK within the CONTRACT TIME, or extension of time granted by the OWNER, then the CONTRACTOR will pay to the OWNER the amount for liquidated damages as specified in the BID for each calendar day that the CONTRACTOR shall be in default after the time stipulated in the CONTRACT DOCUMENTS.

15.4 The CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the WORK is due to the following, and the CONTRACTOR has promptly given WRITTEN NOTICE of such delay to the OWNER or ENGINEER.

15.4.1 To any preference, priority or allocation



order duly issued by the OWNER.

15.4.2 To unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and

15.4.3 To any delays of SUBCONTRACTORS occasioned by any of the causes specified in paragraphs 15.4.1 and 15.4.2 of this article.

#### 16. CORRECTION OF WORK

16.1 The CONTRACTOR shall promptly remove from the premises all WORK rejected by the ENGINEER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and the CONTRACTOR shall promptly replace and re-execute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to the OWNER and shall bear the expense of making good all WORK of other CONTRACTORS destroyed or damaged by such removal or replacement.

16.2 All removal and replacement WORK shall be done at the CONTRACTOR'S expense. If the CONTRACTOR does not take action to remove such rejected WORK within ten (10) days after receipt of WRITTEN NOTICE, the OWNER may remove such WORK and store the materials at the expense of the CONTRACTOR.

#### 17. SUBSURFACE CONDITIONS

17.1 The CONTRACTOR shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the OWNER by WRITTEN NOTICE of:

17.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the CONTRACT DOCUMENTS; or

17.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the CONTRACT DOCUMENTS.

17.2 The OWNER shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the WORK, an equitable adjustment shall be made and the CONTRACT DOCUMENTS shall be modified by a CHANGE ORDER. Any claim of the CONTRACTOR for adjustment hereunder shall not be allowed unless he has given the required WRITTEN NOTICE; provided that the OWNER may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

#### 18. SUSPENSION OF WORK, TERMINATION AND DELAY

18.1 The OWNER may suspend the WORK or any portion thereof for a period of not more than ninety days or such further time as agreed upon by the CONTRACTOR, by WRITTEN NOTICE to the CONTRACTOR and the ENGINEER which notice shall fix the date on which WORK shall be resumed. The CONTRACTOR

will resume that WORK on the date so fixed. The CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to any suspension.

18.2 If the CONTRACTOR is adjudged a bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to SUBCONTRACTORS or for labor, materials or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the WORK or if he disregards the authority of the ENGINEER, or if he otherwise violates any provision of the CONTRACT DOCUMENTS, then the OWNER may, without prejudice to any other right or remedy and after giving the CONTRACTOR and his surety a minimum of ten (10) days from delivery of a WRITTEN NOTICE, terminate the services of the CONTRACTOR and take possession of the PROJECT and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the WORK by whatever method he may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the WORK is finished. If the unpaid balance of the CONTRACT PRICE exceeds the direct and indirect costs of completing the PROJECT, including compensation for additional professional services, such excess SHALL BE PAID TO THE CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR will pay the difference to the OWNER. Such costs incurred by the OWNER will be determined by the ENGINEER and incorporated in a CHANGE ORDER.

18.3 Where the CONTRACTOR'S services have been so terminated by the OWNER, said termination shall not affect any right of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies by the OWNER due the CONTRACTOR will not release the CONTRACTOR from compliance with the CONTRACT DOCUMENTS.

18.4 After ten (10) days from delivery of a WRITTEN NOTICE to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the PROJECT and terminate the Contract. In such case, the CONTRACTOR shall be paid for all WORK executed and any expense sustained plus reasonable profit.

18.5 If, through no act or fault of the CONTRACTOR, the WORK is suspended for a period of more than ninety (90) days by the OWNER or under an order of court or other public authority, or the ENGINEER fails to act on any request for payment within thirty (30) days after it is submitted, or the OWNER fails to pay the CONTRACTOR substantially the sum approved by the ENGINEER or awarded by arbitrators within thirty (30) days of its approval and presentation, then the CONTRACTOR may, after ten (10) days from delivery of a WRITTEN NOTICE to the OWNER and the ENGINEER, terminate the CONTRACT and recover from the OWNER payment for all WORK exe-

cuted and all expenses sustained. In addition and in lieu of terminating the CONTRACT, if the ENGINEER has failed to act on a request for payment or if the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon ten (10) days written notice to the OWNER and the ENGINEER stop the WORK until he has been paid all amounts then due, in which event and upon resumption of the WORK, CHANGE ORDERS shall be issued for adjusting the CONTRACT PRICE or extending the CONTRACT TIME or both to compensate for the costs and delays attributable to the stoppage of the WORK.

18.6 If the performance of all or any portion of the WORK is suspended, delayed, or interrupted as a result of a failure of the OWNER or ENGINEER to act within the time specified in the CONTRACT DOCUMENTS, or if no time is specified, within a reasonable time, an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, shall be made by CHANGE ORDER to compensate the CONTRACTOR for the costs and delays necessarily caused by the failure of the OWNER or ENGINEER.

#### 19. PAYMENTS TO CONTRACTOR

19.1 At least ten (10) days before each progress payment falls due (but not more often than once a month), the CONTRACTOR will submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by such data as the ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the WORK but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the OWNER, as will establish the OWNER's title to the material and equipment and protect his interest therein, including applicable insurance. The ENGINEER will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the OWNER, or return the partial payment estimate to the CONTRACTOR indicating in writing his reasons for refusing to approve payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate. The OWNER will, within ten (10) days of presentation to him of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate. The OWNER shall retain ten (10) percent of the amount of each payment until final completion and acceptance of all work covered by the CONTRACT DOCUMENTS. The OWNER at any time, however, after fifty (50) percent of the WORK has been completed, if he finds that satisfactory progress is being made, shall reduce retainage to five (5%) percent on the current and remaining estimates. When the WORK is substantially complete (operational or beneficial occupancy), the retained amount may be further reduced below five (5) percent to only that amount necessary to assure completion. On completion and acceptance of a part of the WORK on which the price is stated separately in the CONTRACT DOCUMENTS, payment may be made in full, including retained percentages, less authorized deductions.

19.2 The request for payment may also include an allowance for the cost of such major materials and

equipment which are suitably stored either at or near the site.

19.3 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.

19.4 The OWNER shall have the right to enter the premises for the purpose of doing work not covered by the CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the WORK, or the restoration of any damaged WORK except such as may be caused by agents or employees of the OWNER.

19.5 Upon completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the final payment request that the WORK has been accepted by him under the conditions of the CONTRACT DOCUMENTS. The entire balance found to be due the CONTRACTOR, including the retained percentages, but except such sums as may be lawfully retained by the OWNER, shall be paid to the CONTRACTOR within thirty (30) days of completion and acceptance of the WORK.

19.6 The CONTRACTOR will indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demands of SUBCONTRACTORS, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed, in accordance with the terms of the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, his Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

19.7 If the OWNER fails to make payment thirty (30) days after approval by the ENGINEER, in addition to other remedies available to the CONTRACTOR, there shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the CONTRACTOR.

## 20. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

20.1 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with this WORK and for every act and neglect of the OWNER and others relating to or arising out of this WORK. Any payment, however, final or otherwise, shall not release the CONTRACTOR or his sureties from any obligations under the CONTRACT DOCUMENTS or the Performance BOND and Payment BONDS.

## 21. INSURANCE

21.1 The CONTRACTOR shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S execution of the WORK, whether such execution be by himself or by any SUBCONTRACTOR or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

21.1.1 Claims under workmen's compensation, disability benefit and other similar employee benefit acts;

21.1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;

21.1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;

21.1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person; and

21.1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

21.2 Certificates of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK. These Certificates shall contain a provision that coverages afforded under the policies will not be cancelled unless at least fifteen (15) days prior WRITTEN NOTICE has been given to the OWNER.

21.3 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, liability insurance as hereinafter specified:

21.3.1 CONTRACTOR'S General Public Liability and Property Damage Insurance including vehicle coverage issued to the CONTRACTOR and protecting him from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any

operations under the CONTRACT DOCUMENTS, whether such operations be by himself or by any SUBCONTRACTOR under him, or anyone directly or indirectly employed by the CONTRACTOR or by a SUBCONTRACTOR under him. Insurance shall be written with a limit of liability of not less than \$500,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than \$500,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$200,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$200,000 aggregate for any such damage sustained by two or more persons in any one accident.

21.3.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR, and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

21.4 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the work is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the PROJECT and in case any work is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statute, the CONTRACTOR shall provide, and shall cause each SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.

21.5 The CONTRACTOR shall secure, if applicable, "All Risk" type Builder's Risk Insurance for WORK to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the CONTRACT PRICE totaled in the BID. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the CONTRACT TIME, and until the WORK is accepted by the OWNER. The policy shall name as the insured the CONTRACTOR, the ENGINEER, and the OWNER.

## 22. CONTRACT SECURITY

22.1 The CONTRACTOR shall within ten (10) days after the receipt of the NOTICE OF AWARD furnish the OWNER with a Performance Bond and a Payment Bond in penal sums equal to the amount of the CONTRACT PRICE, conditioned upon the performance by

the CONTRACTOR of all undertakings, covenants, terms, conditions and agreements of the CONTRACT DOCUMENTS, and upon the prompt payment by the CONTRACTOR to all persons supplying labor and materials in the prosecution of the WORK provided by the CONTRACT DOCUMENTS. Such BONDS shall be executed by the CONTRACTOR and a corporate bonding company licensed to transact such business in the state in which the WORK is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these BONDS shall be borne by the CONTRACTOR. If at any time a surety on any such BOND is declared a bankrupt or loses its right to do business in the state in which the WORK is to be performed or is removed from the list of Surety Companies accepted on Federal BONDS, CONTRACTOR shall within ten (10) days after notice from the OWNER to do so, substitute an acceptable BOND (or BONDS) in such form and sum and signed by such other surety or sureties as may be satisfactory to the OWNER. The premiums on such BOND shall be paid by the CONTRACTOR. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable BOND to the OWNER.

#### 23. ASSIGNMENTS

23.1 Neither the CONTRACTOR nor the OWNER shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations thereunder, without written consent of the other party.

#### 24. INDEMNIFICATION

24.1 The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the WORK, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR, and SUBCONTRACTOR, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

24.2 In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees, by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under workmen's compensation acts, disability benefit acts or other employee benefits acts.

24.3 The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, DRAWINGS, opinions, reports, surveys, CHANGE ORDERS, designs or SPECIFICATIONS.

#### 25. SEPARATE CONTRACTS

25.1 The OWNER reserves the right to let other con-

tracts in connection with this PROJECT. The CONTRACTOR shall afford other CONTRACTORS reasonable opportunity for the introduction and storage of their materials and the execution of their WORK, and shall properly connect and coordinate his WORK with theirs. If the proper execution or results of any part of the CONTRACTOR'S WORK depends upon the WORK of any other CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the ENGINEER any defects in such WORK that render it unsuitable for such proper execution and results.

25.2 The OWNER may perform additional WORK related to the PROJECT by himself, or he may let other contracts containing provisions similar to these. The CONTRACTOR will afford the other CONTRACTORS who are parties to such Contracts (or the OWNER, if he is performing the additional WORK himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate his WORK with theirs.

25.3 If the performance of additional WORK by other CONTRACTORS or the OWNER is not noted in the CONTRACT DOCUMENTS prior to the execution of the CONTRACT, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional WORK. If the CONTRACTOR believes that the performance of such additional WORK by the OWNER or others involves him in additional expense or entitles him to an extension of the CONTRACT TIME, he may make a claim therefor as provided in Sections 14 and 15.

#### 26. SUBCONTRACTING

26.1 The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the WORK which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.

26.2 The CONTRACTOR shall not award WORK to SUBCONTRACTOR(s), in excess of fifty (50%) percent of the CONTRACT PRICE, without prior written approval of the OWNER.

26.3 The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of his SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

26.4 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the WORK to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the CONTRACT DOCUMENTS insofar as applicable to the WORK of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.

26.5 Nothing contained in this CONTRACT shall create any contractual relation between any SUBCONTRACTOR and the OWNER.

#### 27. ENGINEER'S AUTHORITY

27.1 The ENGINEER shall act as the OWNER'S representative during the construction period. He shall decide questions which may arise as to quality and acceptability of materials furnished and WORK performed. He shall interpret the intent of the CONTRACT DOCUMENTS in a fair and unbiased manner. The

ENGINEER will make visits to the site and determine if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS.

27.2 The CONTRACTOR will be held strictly to the intent of the CONTRACT DOCUMENTS in regard to the quality of materials, workmanship and execution of the WORK. Inspections may be made at the factory or fabrication plant of the source of material supply.

27.3 The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

27.4 The ENGINEER shall promptly make decisions relative to interpretation of the CONTRACT DOCUMENTS.

## 28. LAND AND RIGHTS-OF-WAY

28.1 Prior to issuance of NOTICE TO PROCEED, the OWNER shall obtain all land and rights-of-way necessary for carrying out and for the completion of the WORK to be performed pursuant to the CONTRACT DOCUMENTS, unless otherwise mutually agreed.

28.2 The OWNER shall provide to the CONTRACTOR information which delineates and describes the lands owned and rights-of-way acquired.

28.3 The CONTRACTOR shall provide at his own expense and without liability to the OWNER any additional land and access thereto that the CONTRACTOR may desire for temporary construction facilities, or for storage of materials.

## 29. GUARANTY

29.1 The CONTRACTOR shall guarantee all materials and equipment furnished and WORK performed for a period of one (1) year from the date of SUBSTANTIAL COMPLETION. The CONTRACTOR warrants and guarantees for a period of one (1) year from the date of SUBSTANTIAL COMPLETION of the system that the completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such corrections as may be

necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The OWNER will give notice of observed defects with reasonable promptness. In the event that the CONTRACTOR should fail to make such repairs, adjustments, or other WORK that may be made necessary by such defects, the OWNER may do so and charge the CONTRACTOR the cost thereby incurred. The Performance BOND shall remain in full force and effect through the guarantee period.

## 30. ARBITRATION

30.1 All claims, disputes and other matters in question arising out of, or relating to, the CONTRACT DOCUMENTS or the breach thereof, except for claims which have been waived by the making and acceptance of final payment as provided by Section 20, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. This agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

30.2 Notice of the demand for arbitration shall be filed in writing with the other party to the CONTRACT DOCUMENTS and with the American Arbitration Association, and a copy shall be filed with the ENGINEER. Demand for arbitration shall in no event be made on any claim, dispute or other matter in question which would be barred by the applicable statute of limitations.

30.3 The CONTRACTOR will carry on the WORK and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

## 31. TAXES

31.1 The CONTRACTOR will pay all sales, consumer, use and other similar taxes required by the law of the place where the WORK is performed.

PART 7 - SUPPLEMENTAL GENERAL CONDITIONS

DESCRIPTION

These Supplemental General Conditions amend or supplement the General Conditions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

ARTICLE 10 - SURVEYS, PERMITS, REGULATIONS

10.3.1. Owner has obtained all state and federal permits required for the Work.

10.3.2. Contractor will obtain local permits necessary for the Work. Owner will provide technical information necessary for Contractor to procure any necessary permits prior to undertaking the Work.

ARTICLE 21 - INSURANCE

21.1.6. Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and,

21.1.7. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The Contractor shall make an MCS90 filing if required by law.

21.2. Certificates shall contain a provision that coverages shall afforded under the policies will not be cancelled, non-renewed, or materially changed unless at least thirty (30) days prior written notice has been given to the OWNER and the ENGINEER. Exculpatory language shall be deleted from the notice declaration on the certificates. New certificates shall be provided upon renewal or replacement of any policies.

21.3.1 The minimum limits of liability for Contractor's General Public Liability coverage shall be \$1,000,000 bodily injury and property damage combined single limit.

21.3.2 Change the words "Fire and Extended Coverage" to the words ""All Risk" Coverage on a

**Hamilton Lake Association  
Wetland Structure**

replacement cost basis".

21.3 - 21.5. THE CONTRACTOR IS HEREBY NOTIFIED THAT HE IS NOT TO COMMENCE WORK UNTIL HE HAS OBTAINED SATISFACTORY INSURANCE COVERAGE. During the life of the contract, the Contractor shall carry the following minimum insurance:

The Contractor shall take out and maintain during the life of this Contract such Public Liability and Property Damage Insurance as shall protect him and any Subcontractor performing work covered by this Contract from claims for damage or personal injury, including accidental death, as well as claims for property damage which may arise from operations under this Contract, whether such operations be by himself or by any Subcontractor, or by anyone directly or indirectly employed by either of them; and shall purchase for and furnish to the Hamilton Lake Association, an OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY POLICY with limits of \$1,000,000 per occurrence including liability for both bodily injury and property damage. All liability insurance shall be written on the comprehensive general liability form. An umbrella liability policy is not required. However, if the Contractor has an Umbrella Excess Liability Policy with a limit of \$1,000,000 or more, it shall be permissible to reduce the limits of liability set forth of any underlying coverage in the schedule below. The minimum amounts of such insurance shall be as follows:

	Limits of Liability, Per Occurrence and Aggregate Bodily Injury and Property Damage Combined <u>Single Limit (except otherwise as quoted)</u>
<u>Form of Insurance</u>	
Contractor's General Public Liability	\$1,000,000
Contractor's Pollution Liability	\$1,000,000
Worker's Compensation	Statutory
Employer's Liability	\$1,000,000 each employee, each disease
Automobile Liability (any vehicle)	\$1,000,000 each accident
Owner's and Contractor's Protective Liability	\$1,000,000

Prior to the commencement of the Work, the Contractor shall furnish proof of its compliance with the requirements of this Article 21 by furnishing the OWNER and the ENGINEER with certificates indicating it has the required insurance coverage in force. The OWNER and the ENGINEER shall be named as Co-insureds on the Owner's and Contractor's Protective coverage, as alternate employers on the Worker's Compensation and Employer's Liability coverages, and as Additional Insureds on the remaining coverages.

21.6. All Certificates of Insurance and the insurance policies required by this Article shall contain a provision that coverages afforded under the policies will be primary insurance coverage. If the Owner

has other insurance which is applicable to the loss, it shall be on an excess basis only. The amount of the Contractor's or the insurance company's liability under this Article shall not be reduced by the existence of such other insurance.

- 21.7. Contractor's insurance carriers, for all required insurance coverages, shall waive their rights of subrogation in favor of the OWNER and ENGINEER and any insurance coverages of either of them.

#### **ARTICLE 32 - MISCELLANEOUS**

32.1. The Contractor shall comply with all laws with respect to the employment of labor and payment of local prevailing wage rates for each craft or type of worker needed to execute the contract, in accordance with Indiana Revised Statutes chapter 48, par. 39n-39s. The Contractor shall require all subcontractors to conform with said laws, and agrees to indemnify the Owner for any and all violations of said laws and any rules and regulations now or hereafter issued pursuant to said laws.

32.2. For the entire duration of the work, the Contractor shall conform to all federal and state laws on equal opportunity and fair employment, and to all rules and regulations now or hereafter issued pursuant thereto, including but not limited to the Indiana Human Rights Act (Indiana Revised Statutes chapter 68, par.1-101 et seq.), and an Act to prohibit discrimination, etc. (Indiana Revised Statutes chapter 29, par 17-24).

32.3. The Contractor and all Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, color, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of nondiscrimination.

32.4. All bidders shall submit a Contractor's Certification in substantially the following form along with their bid proposal form:



**Hamilton Lake Association  
Wetland Structure**

STATE OF INDIANA)  
 ) SS.  
COUNTY OF \_\_\_\_\_)

**CONTRACTOR'S CERTIFICATION**

Pursuant to IN. Rev. Stat., the undersigned certifies that he is a duly authorized agent of the prime contractor submitting the attached bid to the Hamilton Lake Association, and that said contractor is not barred from contracting with any unit of state or local government as a result of a violation of any section of the statute.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 199\_\_.

By: \_\_\_\_\_

Title \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

SUBSCRIBED AND SWORN TO before me on this

\_\_\_\_\_ of \_\_\_\_\_, 199\_\_.

\_\_\_\_\_  
Notary Public

PART 8 - SPECIFICATIONS

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## **DIVISION 1 - GENERAL REQUIREMENTS**

**SECTION 01010**

**SUMMARY OF WORK**

**PART 1 GENERAL**

**1.01 WORK COVERED BY CONTRACT DOCUMENTS FOR BIDDING**

- A. Mobilization and demobilization.
- B. Survey and locate in field all existing and new structures.
- C. Excavation for wetland structure construction.
- D. Supply and placement of steel sheet piling
- E. Landscape disturbed areas above the water level.
- F. Restore site, clean and remove damage from construction equipment, including regrading and re-establishing native vegetation.

**1.02 RELATED REQUIREMENTS**

- A. The General and Special Conditions.
- B. The Drawings.

**1.03 WORK BY OTHERS**

The Owner may at times during this Contract perform maintenance or repair of the wetland area of this Project.

**PART 2 PRODUCTS - Not used**

**END OF SECTION**

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Measurement Provisions.
- B. Payment Provisions.
- C. Provisions for Rejected Materials.
- D. Payment Items.
- E. Non-Payment Items.

1.02 MEASUREMENT

- A. Measurement Standards: All work to be paid for at a contract price per unit of measurement will be measured by Engineer in accordance with United States Standard Measures. Where necessary, such computations will be based upon surveys performed by Contractor. A ton shall consist of 2,000 lb avoirdupois.
- B. Measurement by Weight: Material to be measured and paid for by weight will be weighed on accurate, approved scales, furnished by Contractor. Where not otherwise expressly stipulated, payment will be for the net weights installed.
- C. Lump-Sum Measurement:
  - 1. Lump-sum measurement will be for the entire item, unit of work, structure, or combination thereof, as listed or indicated in the Bid Schedule.
  - 2. If Contractor requests progress payments for lump-sum items or amounts in the Bid Schedule, such progress payments will be made in accordance with the schedule of values prepared by Contractor and submitted to Engineer for review in accordance with Section 01300.

1.03 PAYMENT

- A. Payment will be full compensation for furnishing all labor, materials, tools, equipment, transportation, services, and incidentals and for performing all work necessary for completing the erection or installation of the item or work classification.
- B. Full compensation for all expense involved in conforming to the requirements for measuring materials shall be considered as included in the unit or lump-sum prices paid for the materials being measured, and no additional compensation will be made therefore.

1.04 REJECTED MATERIALS

Quantities of material wasted or disposed of in a manner not called for under the Contract; rejected loads of material, including material rejected after it has been placed by reasons of the failure of Contractor to conform to the provisions of the Contract; material not unloaded from the transporting vehicle; material placed outside the lines indicated on the Drawings or established by Engineer; material remaining on hand after completion of the Work; and materials used for correction of unauthorized excavation or overbreak will not be paid for, and such quantities will not be included in the final total quantities. No compensation will be permitted for loading, hauling, and disposing of rejected or waste material.

1.05 PAYMENT ITEMS

- A. Payment will be made at the applicable unit price or lump-sum price as detailed in the Bid Schedule for the payment items listed herein.
- B. Measurement for payment for items of work of this Contract, which are listed below, will be based on the number of units of measurement constructed and/or furnished and installed as specified and shown on the Drawings or as directed.

1.06 NON-PAYMENT ITEMS

No separate payment will be made for other required work not included in the list of payment items below, and the cost of such other work shall be included in the prices of the payment items. Such other work includes, but is not limited to, Division 1 requirements (except Mobilization and Demobilization), site clearing, and testing.

1.07 MOBILIZATION/DEMOBILIZATION

Payment for mobilization/demobilization including all costs to mobilize men, equipment and construction plant to the site, all costs to set-up the Contractor's field office, and all costs to demobilize same will be made at the Lump Sum price in the Bid Schedule. A maximum of 60% of the Lump Sum price bid for Mobilization/Demobilization will be paid upon completion of mobilization as determined by the Engineer. The remaining 40% of the Lump Sum price bid for Mobilization/Demobilization will be paid upon completion of demobilization and clean-up as determined by the Engineer. Mobilization shall not exceed 10% of the total contract price.

1.08 CLEARING AND GRUBBING

Measurement for clearing and grubbing will be made based on the number of acres measured along the plane of the excavation slopes. Payment for clearing and grubbing will be made based on the number of acres measured and at the unit price bid for Clearing and Grubbing which price shall include all costs for removal and disposal of all brush and trees to an off-site disposal area. No payment for clearing and grubbing will be made for areas cleared and grubbed below the water level and the cost for this work, if required will be included in the price bid for Excavation.

1.09 DEWATERING OF WORK AREAS

Dewatering of Work Areas will not be measured for payment. Payment for Dewatering of work areas will be made at the lump-sum price bid for Dewatering of Work Areas, which price shall include all costs of constructing and removing cofferdams to protect the excavations and other work areas for the Contractor's convenience and not shown on the Drawings from inundation. Designing and furnishing all sumps, ditches, pumps, motors, pipes, valves, temporary bulkheads, etc. for care of water and performing all pumping and drainage operations including the furnishing of all power and energy necessary to provide compliance with these Specifications shall also be included in the lump-sum price bid for Dewatering of Work Areas.

1.10 EXCAVATION

Measurement for payment for excavation of material at the structure abutments, classified as Excavation as shown on Drawing, will be made on the basis of the number of cubic yards excavated and as shown in the bid schedule. Prices for excavation shall include all costs for drilling, breaking, ripping, loading, handling and/or stockpile areas, or on-site or off-site disposal areas all materials encountered regardless of type; and foundation preparation. Payment will be made for the quantities excavated as specified and in accordance with the limits shown on the Drawings, or as directed.

No payment will be made for any work associated with removal of slide material or repair of work damaged by slides which are considered to be the Contractor's responsibility. For slides which are not the Contractor's responsibility, payment will be made at the applicable unit price for excavation, measurement being made based on surveys made prior to and after removal of the slide material.

No payment will be made for any work associated with excavation for Contractor's convenience.

**1.11**

**STEEL SHEET PILING**

Measurement for payment for Steel Sheet Piling as shown on Drawings will be made on the basis of the number of square feet of piling wall installed, as projected onto a plumb plane, acceptably placed within the limits shown on the drawings including any additions thereto resulting from changes in design or alignment as specified. Payment for the sheet piling will be made at the unit price bid, which price shall include the cost of supply and installation of sheet piling, interlock filling, steel studs, initial driving, cutting holes, cutting top to final elevation, disposal of cutoff section, and other material and works incidental thereto.

**1.12**

**STONE FOR EROSION PROTECTION**

Measurement for payment for stone for erosion protection as shown on Drawings will be made on the basis of the number of cubic yards of stone placed according to the lines and grades shown on the Drawings or as directed. Payment will be made based on the number of cubic yards measured and at the unit price bid for Supply and Placement of Stone for Erosion Protection which price shall include all costs for supply and placement of stone and all other work necessary.

**1.13**

**FILTER FABRIC FOR USE WITH RIPRAP**



Measure for payment for filter fabric as shown on Drawings will be made on the basis of the number of square feet of fabric placed according to the lines and grades shown on the Drawings or as directed. Payment will be made based on the number of square feet measured and at the unit price bid for Supply and Placement of Filter Fabric for Use With Riprap which price shall include all costs for supply and placement of fabric and all other work necessary.

1.14

**LANDSCAPING AND RESTORATION OF SITE**

No measurement will be made for Landscaping and Restoration of Site. Payment will be made based on the lump sum price bid for Landscaping and Restoration of Site which price shall include all costs for grading, placing topsoil, seeding, mulching, and all other work to restore the exposed excavated slope and shoreline to the condition found prior to construction. The planting of trees or shrubs will not be required as part of this work.

**END OF SECTION**

SECTION 01100

SPECIAL PROJECT PROCEDURES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Working Hours
- B. Inspection by Representatives of Hamilton Lake Association and Other Agencies.
- C. Damage to Existing Property.
- D. Parking.
- E. Field Offices and Storage Facilities.
- F. Construction Schedule and Sequence.
- G. Existing Geotechnical Investigation Reports.

1.02 WORKING HOURS

Perform work in accordance with Hamilton daily working hours between 7:00 a.m. to sundown, Monday through Saturday. No work shall be performed Sunday or holidays except in emergencies and as approved by the Owner.

1.03 INSPECTION BY REPRESENTATIVES OF THE HAMILTON LAKE ASSOCIATION AND OTHER AGENCIES

- A. Allow authorized representatives from the Hamilton Lake Association and other agencies access to the Site.
- B. Provide proper and safe facilities for such access and inspection.

1.04 DAMAGE TO EXISTING PROPERTY

- A. Protect all existing structures, trees, and property from damage and provide bracing, shoring, and other work necessary for such protection.
- B. Repair or replace to the satisfaction of the Owner, all damage to existing structures, materials, trees, and equipment because of Contractor's operations.
- C. The Owner will make a video tape of the approved truck routes for the disposal operation. Damages caused by this operation shall be repaired by Contractor at no cost to the Owner.

1.05 PARKING

- A. Provide and maintain suitable parking areas for the use of all construction workers and others performing work or furnishing services in connection with this Contract.
- B. Coordinate layout of construction, staging, office, and parking areas with the Owner. The general area available shall be as determined by the Owner.

1.06 FIELD OFFICES, STORAGE FACILITIES AND LAYDOWN AREA

- A. Furnish such field offices at the Site as are necessary to perform, supervise and manage the work specified herein. Provide telephone service for such offices, as necessary.
- B. Furnish temporary buildings or trailers as needed for storage of equipment and materials installed under this Contract.
- C. Secure Owner's prior approval for location of field offices, storage facilities, and laydown areas.
- D. No living quarters for any employees of Contractor or his subcontractors will be allowed on Project property.
- E. Secure Owner's prior approval of areas for stockpiling materials.

1.07 CONSTRUCTION SCHEDULE

Contractor shall provide the Engineer a detailed schedule of contract activity within 15 days from notice to proceed. The schedule shall show the major work items and the time frame for start and completion of each item, dates of submittals for items requiring review by the Engineer and all other items as required by the Contract.

**1.08            ARCHAEOLOGICAL OBJECTS**

Contractor shall report any objects of archaeological significance to the Owner unearthed during the excavation work. The Contractor shall stop excavation in any area where archaeological objects are found until Owner approves continuing excavation. In the event that sites which are eligible for the National Register are discovered, the Contractor and Owner must follow the rules and regulations established by the Advisory Council on Historic Preservation and fulfill the requirements of the Indiana Preservation Act (IC 14-21-1).

**1.09            EXISTING GEOTECHNICAL INVESTIGATION**

Refer to Part 9 of this document for Logs of Exploration and results of testing accomplished in 1991 which are included as part of these contract documents.

**END OF SECTION**

**SECTION 01300**

**SUBMITTALS**

**PART 1 GENERAL**

1.01            REQUIREMENTS INCLUDED

- A.     Procedures.
- B.     Construction Schedule.
- C.     Record Drawings.
- D.     Progress Reports.

1.02            PROCEDURES

- A.     Check and certify submittals prior to delivery to the Engineer. Uncertified submittals will be returned unreviewed.
- B.     Deliver certified submittals to the Engineer. Individual submittal items shall be delivered under cover of separate, sequentially numbered transmittal letters.
- C.     Identify Project, Contractor, Subcontractor, Supplier, Owner's contract number; identify pertinent drawing feature, detail number, and Specification section number, as appropriate. Identify deviations from Contract Documents. Provide space for Contractor's and Engineer's review stamps.
- D.     Use English language and U.S. customary system of units of measurement on all submittals.
- E.     Comply with construction schedule for submittals related to Work progress. Coordinate submittal of related items.
- F.     In every case where a submittal does not satisfy the specific requirements of the Contract Documents (whether in the Specifications or Drawings) include a Contractor Waiver Request in a form acceptable to the Engineer so that the proposed change will be more readily picked up when the submittal is reviewed. If

approved and used in the Work, document the change and submit it to the Engineer as an "as-constructed" change.

- G. After Engineer's review of submittal, revise and resubmit within 14 days, identifying changes made since previous submittal. Revisions necessitated by Engineer's comments will not relieve the Contractor of its responsibility to complete the Work in accordance with the requirements of the construction schedule.
- H. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

1.03 CONSTRUCTION SCHEDULE

Prepare and submit for review a complete, detailed construction schedule and plan for executing the work within 15 days from the notice to proceed.

1.04 PROGRESS REPORTS

Prepare and submit a monthly progress report in a form approved by the Engineer.

1.05 RECORD DRAWINGS

Record Drawings. Prior to completion of the Work submit changes in Drawings as each item of Work is completed and after review by Engineer, furnish Engineer one complete set of full size permanent reproducible film copies of approved quality and type and 4 full size sets of prints of Work as finally built, including all field changes. Provide the IDNR, Division of Soil Conservation, Lake and River Enhancement staff one complete set of final "as built" drawings.

1.06 TIME SCHEDULE FOR SUBMITTALS

- A. Submit the required submittals for approval within the time indicated. Where no time is shown, indicate a time which will provide sufficient review time and satisfy the requirements of the approved construction schedule.
- B. Required Submittals.

<u>Section No.</u>	<u>Submittal Items</u>	<u>Calendar Days From Notice to Proceed</u>
01700-1.05	Warranties and Bonds	10 Days
01100-1.07	Construction Schedule	15 Days
01300-1.03		
02140-1.03	Dewatering Work Areas	15 Days
02210-1.05	Excavation	10 Days
02350-1.03	Steel Sheet Piling	15 Days
02900-2.02	Seed Mixture Description	15 Days
01300-1.04	Progress Reports	Monthly
01700-1.02	Certification of Completion	At Project Completion
01300-1.05	Record Drawings	At Project Completion

**PART 2 PRODUCTS - Not Used.**

**PART 3 EXECUTION - Not Used.**

**END OF SECTION**

**SECTION 01400**

**QUALITY CONTROL**

**PART 1 GENERAL**

**1.01 REQUIREMENTS INCLUDED**

- A. General Quality Control.
- B. Workmanship.
- C. Independent Testing.

**1.02 GENERAL QUALITY CONTROL**

Maintain quality control over suppliers, products, services, site conditions, and workmanship, to produce Work of specified quality.

**1.03 WORKMANSHIP**

- A. Comply with industry standards except when more restrictive tolerances or standards are specified herein or on the Drawings.
- B. Perform Work by persons qualified to produce workmanship of specified quality.

**1.04 INDEPENDENT TESTING**

- A. Where specified in other Sections, Contractor will obtain the testing services of an independent agency that is regularly engaged in the testing of construction materials.
- B. As required in individual Specification sections or as directed, furnish to the Engineer such samples of materials as may be necessary for testing purposes.
- C. Furnish such casual labor, equipment, and facilities as is necessary to obtain and handle samples at the Site.

**PART 2 PRODUCTS - Not Used.**



**PART 3 EXECUTION - Not Used.**

**END OF SECTION**

**SECTION 01500**

**CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

**PART 1 GENERAL**

**1.01 REQUIREMENTS INCLUDED**

- A. Mobilization.
- B. Temporary Telephone and Electric Service.
- C. Temporary Water.
- D. Temporary Sanitary Facilities.
- E. Barriers and Enclosures.
- F. Construction Cleaning.
- G. Demobilization.

**1.02 GENERAL REQUIREMENTS**

- A. Install all construction facilities and temporary controls in accordance with applicable codes and maintain them throughout the construction period.
- B. Maintain all existing public utilities located within the project area in operable condition at all times. Provide temporary support where required for execution of project construction.

**1.03 MOBILIZATION**

- A. Move construction materials, plant, equipment, tools, supplies, accessories, and personnel to the Site.
- B. Set-up all offices, plant, and other construction facilities.

**1.04                    TEMPORARY TELEPHONE AND ELECTRICAL SERVICE**

The Contractor shall be responsible for his supplying own temporary telephone and electrical service.

**1.05                    TEMPORARY WATER**

- A.    Water for compaction of soil materials and other construction purposes may be withdrawn from the stream or brought on site from other locations. Contractor shall provide his own pumps and related facilities.
- B.    Provide potable water for drinking purposes for all Project personnel on the Site. Furnish disposable drinking cups at water locations.

**1.06                    TEMPORARY SANITARY FACILITIES**

- A.    Provide sanitary facilities and enclosures for all personnel on the Site.
- B.    Determine number of facilities required based on total number of personnel on Site and in accordance with applicable codes.
- C.    Maintain sanitary facilities in clean conditions at all times.

**1.07                    TEMPORARY FIRE PROTECTION**

- A.    Provide and maintain portable fire extinguishers as required to conform to applicable codes.
- B.    Fire Extinguishers: Multi-purpose (ABC) dry chemical, UL rated.

**1.08                    BARRIERS AND ENCLOSURES**

- A.    Provide barriers and enclosures as required to prevent public entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.

**1.09 CONSTRUCTION CLEANING**

- A. Control accumulation of waste materials and rubbish; periodically dispose of off-Site.
- B. Control dust as required.
- C. Provide a road sweeper for use in cleaning City, County, and State roads and streets where contractor truck traffic creates dust, waste or sediment accumulation problems.

**1.10 DEMOBILIZATION**

- A. Dismantle all offices, plant, and other construction facilities and clean and repair damage caused by their installation or use.
- B. Remove all offices, construction materials, plant, equipment, tools, supplies, accessories, and personnel from the Site.
- C. Remove construction debris from Site and leave Site in clean and orderly condition satisfactory to Owner.
- D. Restore all utilities existing before the start of Work to an acceptable operating condition in accordance with State and local codes and as approved.

**PART 2 PRODUCTS - Not Used.**

**PART 3 EXECUTION - Not Used.**

**END OF SECTION**

**SECTION 01700**

**CONTRACT CLOSEOUT**

**PART 1 GENERAL**

**1.01 REQUIREMENTS INCLUDED**

- A. Closeout Procedures.
- B. Final Cleaning.
- C. Project Record Documents.
- D. Warranties and Bonds.
- E. Operation and Maintenance Data.
- F. Systems Demonstration.
- G. Spare Parts and Maintenance Materials.

**1.02 CLOSEOUT PROCEDURES**

- A. Complete all Work in accordance with these Drawings and Specifications.
- B. Leave all areas free of debris, construction materials, and construction equipment.
- C. When Contractor considers Work has reached final completion, submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for the Owner's inspection.

**1.03 FINAL CLEANING**

- A. Clean Site prior to final inspection.

1.04 PROJECT RECORD DOCUMENTS

- A. Maintain at the Site for the Owner one record copy of:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders.
  - 5. Field test records.
  - 6. Inspection certificates.
- B. Maintain record documents in a clean, dry, and legible condition. Do not use record documents for construction purposes.
- C. Keep record documents and samples available for inspection by the Owner.
- D. Record information on a set of opaque drawings provided by the Engineer.
- E. Record information concurrently with construction progress. Do not cover any Work until required information is recorded.
- F. Drawings: Legibly mark each item to record actual construction, including:
  - 1. Record excavation lines and grades.
  - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
  - 4. Field changes of dimension and detail.

5. Change Orders.
6. Details not on original Drawings.
- G. Specifications: Legibly mark each item to record actual construction.
- H. At contract closeout, deliver record documents and samples to the Owner.
- I. Transmit with cover letter in duplicate, listing:
  1. Date.
  2. Project title and number.
  3. Contractor's name, address, and telephone number.
  4. Number and title of each record document.
  5. Signature of the Contractor or authorized representative.

1.05 WARRANTIES AND BONDS

- A. Provide submittals as required by Section 01300. Execute Contractor's submittals and assemble documents executed by Subcontractors, Suppliers, and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.
- B. Submit material prior to final Application for Payment. For equipment put into use with the Owner's permission during construction, submit within 10 days after first operation. For items of Work delayed materially beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

**PART 2 PRODUCTS** - Not Used.

**PART 3 EXECUTION** - Not Used.

**END OF SECTION**

**DIVISION 2 - SITEWORK**



**SECTION 02100**

**SITE PREPARATION**

**PART 1 GENERAL**

1.01 WORK INCLUDED

- A. Identifying existing utilities.
- B. Removing surface debris.

1.02 REGULATORY REQUIREMENTS

Conform to federal, state, and local codes for disposal of debris.

**PART 2 PRODUCTS - Not Used.**

**PART 3 EXECUTION**

3.01 PREPARATION

- A. Identify all utilities which may interfere with progress of the work.
- B. Identify required lines, levels, contours, and datum.
- C. Protect trees, power lines, culverts, and other features to remain as directed.
- D. Protect bench marks and existing structures.
- E. Maintain and protect existing utilities remaining which pass through work area.
- F. Upon discovery of unknown utility or concealed conditions, discontinue affected Work; notify Engineer.
- G. Maintain site access for vehicle traffic.

**END OF SECTION**

**SECTION 02140**  
**DEWATERING WORK AREAS**

**PART 1 GENERAL**

**1.01 SCOPE**

In accordance with the Specifications contained in this Section and as shown on the Drawings, or as directed by the Engineer, the Contractor shall:

- design, construct, maintain, breach, and remove cofferdams that may be required for construction of the control structure;
- dewater the construction areas as required;
- care for all surface water and groundwater from any source, as may be required, to facilitate the construction work.

**1.02 RELATED SECTIONS**

- A. Section 02210: Excavation.

**1.03 SUBMITTALS**

To proceed, a dewatering plan shall be submitted for approval. The dewatering plan shall address both the control of ground water as well as surface water and, as a minimum, shall include the proposed sequence of construction.

**PART 2 PRODUCTS - Not Used.**

**PART 3 EXECUTION**

**3.01 DEWATERING**

General: All necessary features shall be scheduled and constructed consistent with provisions outlined herein.

Cofferdams shall be constructed as needed by the Contractor to accomplish the construction of the control structure. The typical cross-sections, minimum required crest elevation, and lines and grades for each cofferdam shall be as required by the Contractor's work plan. Topsoil shall be stripped prior to placement of fill if the cofferdam is an embankment type.

**3.02 CARE OF WATER**

Upon approval of the water control plan, all features of the plan shall be constructed; all required equipment shall be furnished, installed, and maintained; and the approved dewatering system shall be placed into operation. The system shall be operated and maintained during all work. Sufficient standby equipment shall be provided to ensure that unwatering operations are continuous and that backup equipment is available in case of emergencies.

**END OF SECTION**

## SECTION 02210

### EXCAVATION

#### PART 1 GENERAL

##### 1.01 SCOPE

In accordance with the Specifications contained in this Section and as shown on the Drawings, or as directed, the Contractor shall:

- perform all excavation of whatever classification,
- remove slides,
- scale and stabilize natural and excavated slopes,
- dispose of excess excavated materials, and
- prepare foundations.

##### 1.02 RELATED SECTIONS

- A. Section 02100: Site Preparation
- B. Section 02140: Dewatering of Work Areas
- D. Section 02900: Landscaping

##### 1.03 QUALITY ASSURANCE

- A. The Contractor shall be fully responsible for properly stabilizing and maintaining any temporary trenches, excavations, and excavated slopes and shall take such steps as necessary, including flattening, benching and providing temporary support, to protect the Work, personnel, and property.
- B. The Contractor shall be fully responsible for stabilizing and maintaining any permanent trenches, excavations and excavated slopes until the permanent support works, that are part of this Work, are constructed.

**1.04 DEFINITIONS**

- A. Excavation - General: Excavation will be classified according to work areas or structures as specified herein and as shown on the Drawings. Excavation shall consist of stripping and the removal of overburden and shall be accomplished by hand excavation, machine excavation, drilling, breaking, ripping, loading, transporting, and dumping of materials either in approved disposal areas and stockpiles on site or by hauling to off-site disposal areas, or to locations where it is to be used as fill material; spreading and shaping material in disposal areas; and loading, transporting, and dumping of material from stockpiles to disposal or fill use areas.
- B. Excavation for Contractor's Convenience: Excavation for Contractor's convenience shall consist of all excavation for temporary project features, including but not limited to temporary haul and access roads; Contractor's offices, shops, storage facilities, and work areas; and all excavation performed for the Contractor's convenience.

**1.05 SUBMITTALS**

- B. Excavation Plan: The plan shall include:
  - conceptual plans and diagrams for handling excavation, and spoil materials and
  - a description of the proposed excavating and hauling equipment which will be used.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION**

**3.01 LINES, GRADES, AND SLOPES**

- A. Excavation: Unless otherwise approved, excavation shall be carried out to the lines and grades shown on the Drawings or to suitable foundation materials as directed. Permanently exposed excavation shall be finished to the lines and grades shown on the Drawings, and final slopes shall be dressed to present a neat and orderly appearance.
- B. Slides: In case of slides, all slide material shall be removed to a stable slope at or outside of the lines and grades shown on the Drawings, or as directed, and damaged work shall be repaired. Slides occurring in areas where excavated slopes were steeper than those shown on the Drawings shall be the Contractor's responsibility. Slides occurring in areas where excavation has been completed to the lines and grades shown on the Drawings or in areas where excavation is being performed with use of

slopes not steeper than the final slopes shown on the Drawings will be the Owner's responsibility.

**3.02 PROCEDURES**

Excavation may be accomplished by any approved method and by the use of any excavating and transporting equipment suitable to the work. The Engineer shall have the right to: (1) vary the depth, width, and length of the excavations and to increase or decrease the slopes of the excavations and (2) require the use of berms in permanent slopes where none are shown on the Drawings. All necessary precautions shall be taken to preserve the materials beyond and below the lines of excavation in a sound and undisturbed condition. Final grades shall be protected against damage from erosion and traffic. Particular care shall be exercised to ensure that the excavated grades and slopes are not rutted, squeezed, or otherwise damaged by repeated travel of construction equipment. All such damage shall be repaired.

**3.03 DISPOSAL**

Disposal operations shall be as specified herein. Excavated materials shall be placed in disposal areas designated by the Owner, stockpiles, or hauled off-site and disposed of if directed. The materials shall be placed in a neat and orderly manner, and the completed area shall be free of pot holes and unsightly humps. Excavated materials in stockpiles shall not be contaminated or mixed with other unusable materials. The areas shall be sloped to drain, shall be shaped as directed, and shall be maintained and left in such condition that they present a neat and orderly appearance and blend with the surrounding topography.

**END OF SECTION**

**SECTION 02350**

**STEEL SHEET PILING**

**PART 1 GENERAL**

**1.01 SCOPE**

This section covers the requirements for the steel sheet piling for the construction of the wetland structure.

**1.02 REFERENCES**

**A. American Society for Testing and Materials (ASTM):**

A 108-90a            Steel Bars, Carbon, Cold Finished, Standard Quality

A 328-90            Steel Sheet Piling

**1.03 SUBMITTALS**

The following items shall be submitted :

**A. Equipment Description:** The Contractor shall submit complete descriptions of pile driving equipment, including hammers, extractors, protecting caps and other appurtenances.

**B. Shop Drawings:** Shop drawings for proposed sheet piling, including fabricated sections, shall:

1. show complete piling layout dimensions and details, driving sequence and location of installed piling;
2. include details and dimensions of templates and other temporary guide structures for installing piling; and
3. include details of the method of handling piling in order to prevent permanent deflection, distortion, or damage to piling interlocks.

**C. Certificates:**

1. Piling: The Contractor shall furnish the Engineer a certificate showing the piling type, dimensions and section properties. Piling shall not be delivered to the site prior to the receipt by the Contractor of a written notice of acceptance from the Engineer.
2. Interlock Filling: The Contractor shall furnish the Engineer a Certificate of Compliance stating that the interlock filling meets the required specification.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Steel Sheet Piling: Steel for sheet piling shall meet the requirements of ASTM A 328. Sheet piling shall be of the type indicated or specified, and be of a design such that when in place they shall interlock with the adjacent sheet piling and be continuously interlocked throughout their entire length. All piling shall be provided with standard pulling holes located approximately 4 inches below the top of the pile, unless otherwise shown or directed. Sheet piling including special fabricated sections shall be full-length sections of the dimensions shown or specified. Fabricated sections shall conform to the requirements shown or specified and piling manufacturer's recommendations for fabricated sections. The piling shall have properties equivalent to the one shown on Drawing and if the nominal width of the sheet varies from what is listed in the table, the following shall be submitted to the Engineer for approval at no additional cost to the Owner.
1. Complete shop drawings of the proposed sections showing the dimensions and details of the sheet piling including all fabricated and corner sections.
  2. A complete layout of the sheet piling. The alignment of the control structure shall remain unchanged.
- B. Headed studs shall meet the requirements of ASMT A 108 grades 1010 through 1020.

**PART 3 EXECUTION**



## 3.01 PLACING AND DRIVING

- A. Placing: Piles shall be carefully located as shown or directed and driven in a plumb position, each pile interlocked with adjoining piles for its entire length, so as to form a continuous diaphragm throughout the length of each run of wall. Interlocks shall be properly engaged with the thumb of each pile gripped by the thumb and finger of the adjacent pile. The Contractor shall drive all piles as true to line as practicable and shall provide suitable temporary walls or guide structures to insure that the piles are driven in correct alignment. Piles shall be driven to the depths shown on the drawings and shall extend to the elevations indicated for the tops of the piles. A tolerance of plus or minus one inch from the final top elevation will be permitted.
- B. Driving: Sheet piles shall be driven by approved methods in such manner as not to subject the piles to serious injury and to insure proper interlocking throughout the length of the piles. Pile hammers shall be approved sizes and types and shall be maintained in proper alignment during driving operations by use of suitable leads or by guides attached to the hammer. A protecting cap of approved design shall be employed in driving, when required, to prevent damage to the tops of piles. All piles shall be driven without the aid of a water jet, unless otherwise authorized in writing. Adequate precautions shall be taken to insure that piles are driven as nearly plumb as practicable. If at times the forward or leading edge of the piling wall is found to be out of plumb in the plane of the wall by more than 1 in 48, the piles already assembled and partly driven shall be driven to full depth and the Contractor shall provide and drive tapered piles or take other corrective measures to insure the plumbness of succeeding piles. The maximum permissible taper for any tapered pile will be one eighth of an inch per foot of length. Each sheet of piling shall be driven to a lower grade than those behind it in the same run, except as shown, and when the pile cannot be driven deeper.

If the pile next to the one being driven tends to follow below final grade, it may be pinned to the next adjacent pile. Should boulders or other obstructions render it impracticable to drive a pile to the specified penetration, the Contractor shall make such changes in design or alignment of the pile structure as may be deemed necessary by the Engineer to insure the adequacy and stability of the structure. Payment for the additional labor and materials necessitated by such changes will be made at the applicable contract prices. Piles driven out of interlock with adjacent piles or otherwise injured shall be removed and replaced by new piles at the Contractor's expense.

## 3.02 CUTTING AND SPLICING PILES

Piles extending above grade shall be cut off to required grade. Piles driven below grade and piles which because of damaged heads have been cut off to permit further driving and are then too short to reach final grade shall be extended to the required grade by welding an additional length, when directed, without cost to the Owner. The Contractor shall trim the tops of piles excessively battered during driving, when directed to do so, at no cost to the Owner. Cut-offs shall become the property of the Contractor and shall be removed from the work site. All cutting shall be done in a neat and workmanlike manner. Should splicing of piles be necessary, the splice shall be made by an approved butt weld making full penetration of the web. Piles adjoining spliced piles shall be full length piles. Pulling and handling holes shall be plugged by welding steel plates, of a thickness equal to the piling thickness over the holes.

**3.03            PULLING AND REDRIVING**

The Contractor may be required to pull certain selected piles after driving, for test and inspection, to determine the conditions of the piles. Each pile so pulled and found to be damaged to such extent as would impair its usefulness in the structure shall be removed from the work and the Contractor shall furnish and drive a new pile to replace the damaged pile. Piles pulled and found to be in a satisfactory condition shall be redriven.

**3.04            WELDING ACCESSORIES**

Welding shall conform to the provisions of AWS D1.1. Welders and welding operators shall pass successfully the qualification tests prescribed by Section 5 of AWS D1.1. The Contractor shall submit to the Engineer the names of the welders and welding operators so qualified, the date qualified, and the code under which qualified. Prior qualification will be acceptable only when the Contractor certifies that the welder has performed satisfactory work at the process, and in all positions, for which qualified, within the preceding three months. The Contractor shall require any welder to repeat the qualifying tests when, in the opinion of the Engineer, the work of the welder indicated a reasonable doubt of his proficiency. In such cases, the welder shall be recertified, as above, if he successfully passes the retest. All expense in connection with qualification and requalification shall be borne by the Contractor.

**END OF SECTION**

**SECTION 02500**

**STONE FOR EROSION PROTECTION**

**PART 1 GENERAL**

**1.01 WORK INCLUDED**

The work shall consist of furnishing and placing of erosion control stone adjacent to the abutments of the sheetpile structure and downstream of the notch as indicated in the Drawings or as instructed by the Engineer.

**1.02 RELATED SECTIONS**

- A. Section 02600: Filter Fabric for Use with Riprap

**PART 2 PRODUCTS**

**2.01 MATERIALS**

Stone for Erosion Protection, Sediment Control, and Rockfill shall meet the following requirements:

(a) Description. The material shall be stone quarried from undisturbed, consolidated deposits of rock reasonably free of shale and shaly stone. The ledges shall be sufficiently thick to produce the desired dimensions. The stone shall be reasonably free of laminations, seams, cracks and other structural defects or imperfections tending to destroy its resistance to weather. Field stone or boulders will not be accepted. Bedding material shall be crushed stone, crushed gravel, or crushed sandstone.

(b) Quality. Stone for erosion protection, sediment control or rockfill shall be quarried from ledges meeting one of the listed quality designations. All ledges shall be sufficiently thick to produce the desired dimensions. Elongated pieces (length is greater than 5 times average thickness) shall not exceed 10% by weight.

(c) Gradation. Stone for erosion protection or sediment control shall meet the gradation standards gradation No. 3 presented below:

**Rock Size - Percent Passing versus Sieve Size**

Sieve Size	90	50	40	12	10	6	3	1
Percent Passing		100			50+/-20			8+/-8

**PART 3 EXECUTION**

**3.01 PLACEMENT**

Before placing erosion control stone, the foundation surface shall be graded, and trimmed as shown on the Drawings or as directed by the Engineer.

Dumped stone shall be constructed by placing to full thickness the stone on the prepared foundation, including filter fabric, spreading by means of suitable earthmoving equipment and trimming and reworking to the required lines, levels and grade. The stone shall be placed in a manner which ensures that the larger fragments are uniformly distributed, and the foundation is not displaced or disturbed and the filter fabric is not ripped. The material shall be placed in a manner that will prevent segregation of the small and large stones, and the final layer shall be dense, interlocked and with a minimum of voids. Hand placement will be required only to the extent necessary to achieve a well-keyed surface.

**END OF SECTION**

**SECTION 02600**

**FILTER FABRIC FOR USE WITH RIPRAP**

**PART 1 GENERAL**

**1.01 WORK INCLUDED**

Placement of filter fabric beneath riprap to be installed to protect the structure's abutments from erosion and to control scouring in the channel downstream of the notch as indicated in the drawings.

**1.02 RELATED SECTIONS**

- A. Section 02500: Stone for Erosion Protection

**PART 2 PRODUCTS**

**2.01 MATERIALS**

The filter fabric material shall consist of nonwoven filaments formed from a plastic yarn of a long-chain synthetic polymer composed of at least 85 percent by weight of polyolefins, or polyesters, and shall contain stabilizers or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure. After forming, the fabric shall be processed so that the filaments retain their relative positions with respect to each other. The fabric shall be free of defects or flaws which significantly affect its physical and/or filtering properties.

The filter fabric shall be formed in widths of not less than 6 feet. Sheets of fabric may be sewn together with thread of a material meeting the chemical requirements given for the plastic yarn to form fabric widths as required. The sheets of filter fabric shall be sewn together at the point of manufacturer or another approved location.

The texture of the fabric shall be such that the bedding and riprap will remain in an equilibrium state and not slip or slide. The filter fabric shall be rot proof, mildew proof, insect resistant, have a high dimensional stability when set, have good soil filtration characteristics, have a high resistance to tear propagation in all directions, and meet the following minimum conditions and ASTM Tests for the gradation of riprap specified:

## Filter Fabric

Weight of Fabric (oz/sq yd), ASTM D 3776 (Mod.)	6.0
Burst Strength (psi), ASTM D3786 (Note 1)	250
Trapezoidal Tear Strength (lbs), ASTM D 1117 (Note 2)	60
Grab Tensile Strength (lbs), ASTM D 4632 (Note 2)	160
Grab Tensile Elongation (%), ASTM D 4632 (Note 2)	20

Note 1. Manufacturer's certification of fabric to meet requirements

Note 2. Test sample shall be wet tested

The vendor shall furnish certified test reports with each shipment of material attesting that the fabric meets the above requirements. A sample of 5 sq yds of the fabric shall be furnished from each shipment for verification.

The fabric shall meet the requirements noted in the following and provide an AOS (apparent opening size) determined by the Engineer after an on-site investigation of the soil to be protected, based on the following criteria:

(a) Piping Resistance. (soil retention) (Note 1)

(1) Soil with 50 percent or less particles by weight passing No. 200 sieve. AOS less than No. 30 sieve, TF25 Method 6.

(2) Soil with more than 50 percent particles by weight passing No. 200 sieve. AOS less than 0.3 mm TF25 Method 6.

(b) Permeability. (Note 1) K of fabric greater than 10K of soil - ASTM D 4491.

Note 1. Certification from the manufacturer of fabric is required stating that the product meets the piping resistance and permeability requirements.

## PART 3 EXECUTION

### 3.01 PLACEMENT

Filter fabric shall be handled and placed in accordance with the manufacturer's recommendations and as directed by the Engineer. Filter fabric shall be placed on the bottom and sides of prepared foundations at abutments and downstream of the structure notch as indicated in the drawings. Filter fabric shall be placed loosely upon or against the surface to receive the fabric so that the fabric conforms to the surface without damage when the cover material is placed.

Prior to placing filter fabric, the surfaces upon or against which the fabric is to be placed shall be free of loose or extraneous material and sharp objects that may damage the fabric during installation.

## **Filter Fabric**

The fabric will be joined with overlapped joints on all adjacent borders. All fabric joints shall overlap by a minimum of 1.0 foot. The fabric shall be placed such that the fabric being placed shall overlap the adjacent section of fabric in the direction the cover material is being placed.

Vehicles or equipment shall not be operated or driven directly on the filter fabric.

Fabric damaged during placement shall be replaced or repaired, as directed by the Engineer, by the Contractor at his expense. Fabric damaged beyond repair, as determined by the Engineer, shall be replaced. Repairing damaged fabric shall consist of placing new fabric over the damaged area. The minimum fabric overlap from the edge of the damaged area shall be 3 feet.

**END OF SECTION**

**SECTION 02900**

**LANDSCAPING**

**PART 1 GENERAL**

**1.01 WORK INCLUDED**

Restoration of shoreline and construction area to preconstruction conditions. Site restoration work shall include but not be limited to grading, placing topsoil, and establishment of grass cover.

**1.02 DEFINITIONS**

- A. Topsoil: Organic soil with silt, sand and clay constituents, free of rocks and debris.
- B. Mulching: Protective covering of straw or other material over the seeded topsoil.
- C. Grass Cover: Stand of grass resulting from seeding and maintaining until approved.

**PART 2 PRODUCTS**

**2.01 TOPSOIL**

Topsoil shall be as previously defined. The material shall not be mixed with subsoil, large stones, refuse, large roots, and foreign matter and shall be reasonably free from hard clods and undesirable material harmful to plant life.

**2.02 SEEDING MIXTURES**

Seed mixture for lake shore slope protection areas and wetland areas above the normal water level will include a range of native vegetation, including species adaptable to wet, mesic, and dry prairies. Contractor will submit a description of proposed seed mixture for this Work in accordance with Section 01300.

**PART 3 EXECUTION**

**3.01 RESTORATION OF CONSTRUCTION AREA TO PRECONSTRUCTION  
CONDITION**

- A. Documentation: Contractor shall make a videotape documentation of the shoreline



condition prior to construction or 15 days after notice to proceed, whichever is sooner. Contractor shall also add surveying data to the Drawings as necessary to document the pre-construction grades. Shoreline shall be restored to the preconstruction condition with the exception of construction changes shown on the drawings.

- B. Grading: Areas disturbed during construction shall be regraded to within 4 inches of the original lines.
- C. Topsoil: Areas to receive topsoil shall be disced and/or harrowed to a depth of no less than 2 in. and shaped to within 4 in of the original lines and grades documented before inception of construction. The area shall be free from large clods, large rocks, roots and other foreign matter before any topsoil is deposited. When the area is fully prepared the topsoil shall be deposited and spread to a depth of 8 inches.

**3.02. GRASS COVER**

- A. Seeding and mulching shoreline and wetland areas above the normal lake level will be done by manual seeding or other approved means. Fertilizer shall not be applied.
- B. Seeding: Rate of seeding of slope protection areas and wetland areas above the normal lake level will be as necessary to re-establish dense stand of native grass and other plants.
- C. Mulching: Obtain prior approval if intending to use erosion mat for mulching.

**3.03. MAINTENANCE**

- A. Maintain all seeded areas until a uniform dense stand of healthy grass or plants has been produced, free of bare spots and gullies formed by erosion.
- B. Maintenance shall consist of the necessary protection of seeded and grassed areas including mulching, watering, mowing, and repair of all areas damaged by erosion and shall include regrading and reseeding if for any reason whatsoever a uniform stand of grass is not obtained.

**END OF SECTION**

PART 9 - EXPLORATION AND TESTING INFORMATION

9.1 SOIL EXPLORATION AND TESTING

Subsurface soil exploration and laboratory testing of soil samples were conducted by Harza. The results of the soil exploration and testing were used to determine criteria for the construction of the Hamilton Lake Wetland Structure. The soil exploration and testing report is provided as part of this section.

Sampling was conducted and samples were visually classified in the field. Soil samples were retained for testing in Harza's soil laboratory. Laboratory testing included Atterberg limits, gradation analysis, moisture content, organic matter content, and visual classification of selected samples.

**REPORT OF SUBSURFACE EXPLORATION  
AND  
LABORATORY TESTING**

**HAMILTON LAKE ENHANCEMENT PROJECT  
WETLAND DESIGN SITES**

**HARZA ENGINEERING COMPANY  
NOVEMBER 1991**

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## **I. INTRODUCTION**

Subsurface soil exploration and laboratory testing of soil samples were conducted in accordance with the Scope of Services in the Hamilton Lake Enhancement Revised Proposal for Phase II Services (Design), dated August 10, 1990. The results of the soil exploration and testing were used to determine criteria for use in the design of six artificial wetlands proposed for construction to enhance the water quality of Hamilton Lake.

The purpose of this report is to present, summarize, and interpret subsurface and laboratory information that has been gathered as a result of drilling and testing of selected soil samples.

## **II. FIELD WORK**

Field work was conducted on July 30 & 31 and August 6 & 7, 1991. Harza's Mr. Carl M. Brown was responsible for making field observations and for logging boreholes and test pits.

Drilling was conducted by Raimonde Drilling Corporation, Inc., Chicago, Illinois, and test pits were excavated by Butler & Butler Construction, Inc., Auburn, Indiana. The subsurface exploration program is summarized below and in Table I.

At site A, which is located on Haughey Ditch (see Exhibit 1), two boreholes were drilled and two test pits were excavated. At site B, located on the Lillian Metz Ditch, upstream of the confluence of Burch Ditch, two test pits were excavated. At site E, located on Black Creek east of Highway 1, two borings were made and one test pit was excavated. At site F two test pits were excavated. At site G, located east of the sand and gravel pit operated by Flegal Sand & Stone Company, three soil borings were made. At site H, located across the county road west of site G, one test pit was excavated.

**Table I - Hamilton Lake Enhancement Project  
 Summary of the Subsurface Exploration Program**

<u>Site</u>	<u>Soil Borings</u>	<u>Location</u>	<u>Dates</u>	<u>Test Pits</u>	<u>Location</u>	<u>Dates</u>
A	Two: AB1 AB2	Rt. Abut. Lt. Abut.	8/7 8/7	Two: AT1 AT2	Rt. side Rt. side	7/31 7/31
B	None			Two: BT1 BT2	At dam Rt. side	7/31 7/31
E	Two: EB1 EB2	Lt. Abut. At dam	8/7 8/7	One: ET1	Lt. side	7/31
F	None			Two: FT1 FT2	Lt. Abut. Center	8/7 8/7
G	Two: GB1 GB2 GB3	Lt. Abut. Dam Cntr. Rt. Abut.	8/6 8/6 7/30	None		
H	None			One: HT1	D/S dam	7/31

All borings were advanced using 4-1/2" I.D. hollow stem augers powered by a CME 55 track mounted drill rig. Samples were obtained at 2-1/2 foot intervals by split spoon sampling according to ASTM D-1286. Representative samples were placed in glass jars and retained by Harza for testing in Harza's soil laboratory.

*In situ* shear strength was measured in the field using a pocket penetrometer and a hand torvane shear strength test kit.

### III. LABORATORY TESTING

Laboratory testing included Atterberg Limits, gradation analysis, visual classification, and standard Proctor for selected samples. The laboratory testing program is summarized on Table II below.

**Table II - Hamilton Lake Laboratory Soil Testing Program**

<u>Site</u>	<u>Sample</u>	<u>Atterberg Limits</u>	<u>Gradation</u>	<u>Moisture Content</u>	<u>Standard Proctor</u>
Site A	AB1-S1	xx	xx	xx	
Site A	AB1-S2	xx	xx	xx	
Site A	AB2-S1	xx	xx	xx	
Site B	BT1-S1	xx	xx	xx	
Site B	BT2-S2	xx	xx	xx	
Site B	Creek	xx	xx	xx	
Site E	EB1-S1		xx	xx	
Site E	EB1-S3		xx	xx	
Site E	EB1-S5		xx	xx	
Site E	EB2-S1	xx	xx	xx	
Site E	EB2-S2	xx	xx	xx	
Site E	EB2-S3	xx	xx	xx	
Site E	ET1-S2		xx	xx	xx
Site E	Creek		xx	xx	
Site F	FT1-S1	xx	xx	xx	
Site F	FT1-S2		xx	xx	
Site F	FT2-S1	xx	xx	xx	
Site F	FT2-S2	xx	xx	xx	
Site F	FT2-S3		xx	xx	xx
Site G	GB1-S1		xx	xx	
Site G	GB1-S2		xx	xx	
Site G	GB1-S3	xx	xx	xx	
Site G	GB3-S6		xx	xx	
Site H	HT1-S2	xx	xx	xx	xx
Site H	Creek	xx	xx	xx	
Total		15	25	25	3

#### IV. SUMMARY OF FIELD AND LABORATORY RESULTS

**SITE A.** At Site A, soil borings were located on either side of the proposed dam, and two test pits were excavated within the proposed wetland area (see Exhibit 2). The upper 8-10 feet of soil is stiff silty clay with some sand (CL) or stiff clayey silt (ML). Below the silty clay lies gray clay (CL). The gray clay includes a two foot thick soft layer which lies above and below a very thin (2-4 inches thick) coarse sand layer which is located approximately at the depth of the water table. Below the soft layer, the gray clay becomes medium to hard.

Gravelly clay was encountered at a depth of about 18 feet beneath the proposed right abutment, and gravelly clayey sand was found at a depth of 4.5 feet in one of the test pits. The gravelly layers do not appear to be continuous and contain at least 40% fines. Seepage under the embankment dam along gravel layers is unlikely and a seepage cut-off is not necessary.

Excavation of a grass channel spillway or of a deep pool to increase sediment trapping efficiency upstream of the dam will provide suitable embankment fill material. The natural moisture content of the upper 5 feet of soil is below the plastic limit, therefore, preliminary indications are that excavation and compaction of this material will not be a problem during construction.

**SITE B.** Two test pits were excavated at Site B in the vicinity of the proposed wetland (see Exhibit 3). The soil, to a depth of about 12 feet, varies between silty clay (CL) and clayey silt (ML). Some sand lenses were found, however, they were discontinuous within the test pits.

The moisture content of the upper few feet of soil is below the plastic limit, therefore, no problems should be encountered in working the soil during construction.

**SITE E.** Two soil borings and one test pit were conducted at Site E. One soil boring was located on the left abutment of the proposed dam and the other was located in the bed of Black Creek upstream of the proposed dam (see Exhibit 4). The test pit was located above the Black Creek flood plain to the left and upstream of the proposed dam.

The left abutment, to a depth of about 10 feet, is silt (ML), silty sand (SM), and gravelly silt (GM). From 10-11 feet, there is a layer of well-graded quartz sand (SW). Below the sand layer the soil is gravelly sand and gravelly sand with some clay clasts to a depth of about 15 feet at which depth the soil is again silt and silty sand. The uncorrected SPT blowcount values (N) are high, ranging from 14 to 34, therefore, the abutment is relatively dense.



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Geotechnical Exploration and Testing Report  
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The existing creek bed has a layer of gravel about three inches thick which overlies gravelly silty sand (SM) to a depth of about eight feet. From depths of 8-13 feet, the soil is hard gray clay (CL). The foundation soil should have adequate bearing capacity as evidenced by the uncorrected SPT blowcount values.

In the location of the test pit, the topsoil was 1.5 feet thick. Below the topsoil was a layer of gray medium to hard silty clay (CL) extending to a depth of 5 feet followed by a gray clay (CL) to a depth of 6.5 feet. From 6.5 feet to the bottom of the test pit (11 feet deep) was a layer of silty sandy gravel with some cobbles (GP-GM). The water table was at a depth of about 7.5 feet. The gravel was probably deposited along Black Creek before the creek eroded down to its present level. The gravel is similar to existing gravel along the present creek bed and has a high permeability as evidenced by the rate that water entered the test pit. The existence of a continuous gravel layer within the foundation material below the dam indicates that consideration should be given to design of a seepage cutoff beneath the proposed structure.

**SITE F.** Two test pits were excavated at Site F, one located at the location of the proposed left abutment and the other in the center of the proposed wetland (see Exhibit 5).

At the location of the left abutment, the soil is clayey sand, silty sand and gravelly clayey sand (SC) to a depth of about 5 feet. From 5-7 feet in depth, the soil is poorly graded sand with some silt (SP). From 7-12 feet, the soil is gravelly sand with clay clasts.

In the center of the wetland site the existing topsoil is over three feet thick and is dark brown, organic, silty sand. Below the topsoil is medium gray clay and clayey gravel.

**SITE G.** Site G is an existing emergent wetland, therefore, to minimize preconstruction impact, no test pits were excavated. The three borings conducted at the site are adequate to define the soil layer types and thicknesses.

There is a layer of soft, black silty organic soil up to 11 feet thick deposited throughout the site from abutment to abutment. The boring on the left abutment, however, was located on a bench midway up the abutment and was above the contact between the black organic soil and the underlying silty sand (see Exhibit 6).

The left abutment and the soil beneath the organic soil is predominately silty sand (SM). However, there is a clayey sand layer from about 10-14 feet in depth at both the left abutment and right abutment, and some gravels with the sand below the clayey sand at the right abutment.

The uncorrected SPT blowcount values ranged from 8 to 13 in the left abutment. The abutment should provide an adequate foundation for the proposed box-culvert spillway. Consideration should be given to removal of the thick organic foundation material or to improving the material's stability by preloading and consolidation. To verify that there is adequate lateral area on the left abutment for construction of the box-culvert spillway, a hand auger boring program is recommended to further define the contact between the soft black topsoil and the silty sand foundation soil.

SITE H. The test pit excavated at Site H revealed that the creek bank at the test pit location consists of silty organic topsoil and sandy silty clay to a depth of about four feet followed by a silty sand layer (SM) at least 10 feet thick.

The test pit was located on the left bank about 200 feet downstream of the existing berm at Site H (see Exhibit 7). If the proposed dam is to be located downstream of the existing berm, the upper sandy silty clay is suitable for embankment fill material while the silty sand is adequate for the spillway foundation.

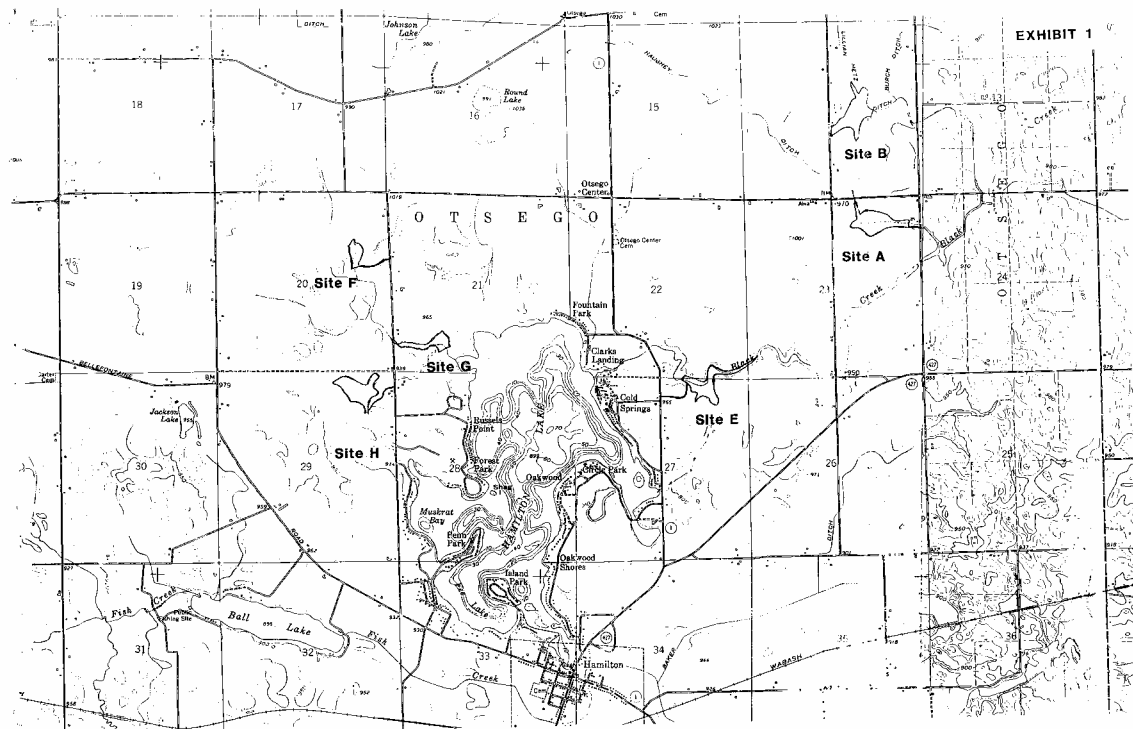
If the existing berm is utilized as the lower half of the embankment dam, then a hand auger boring program is recommended to further define the foundation soils at the right abutment and the existing fill in the berm.

## V. CONCLUSION

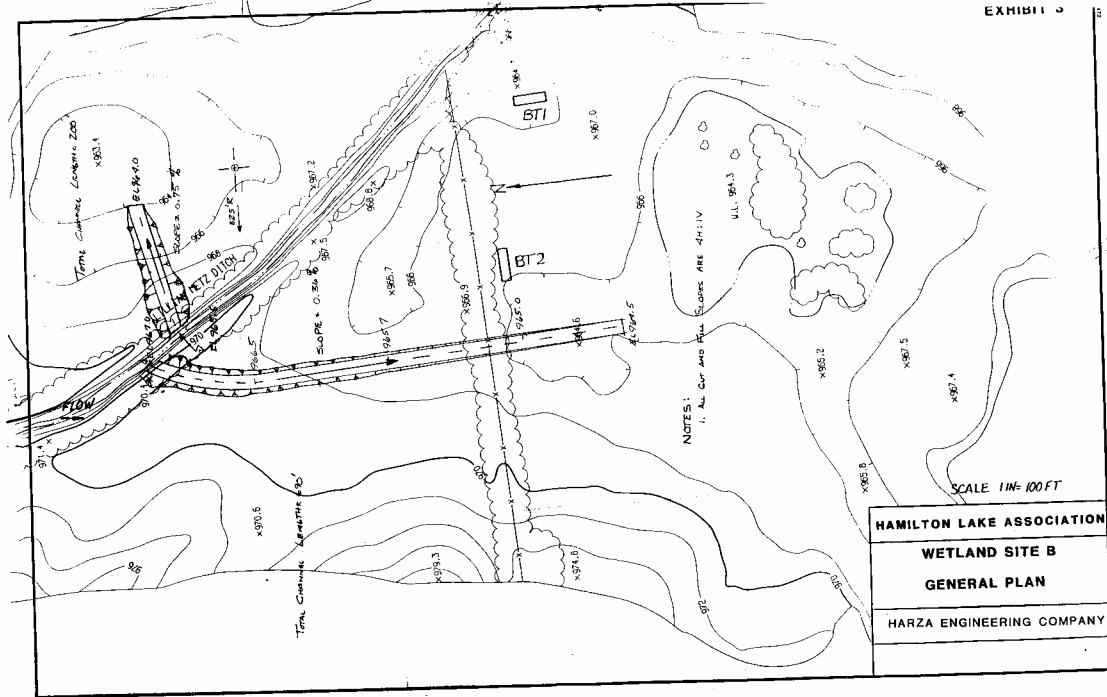
The exploration program which was conducted at the proposed wetland sites should be adequate for the design and construction of wetlands in Sites A - F. The field exploration and laboratory testing programs have revealed information regarding the soil layers and construction materials at the wetland sites. The foundation conditions at the sites are well defined and suitable material for fill has been located.

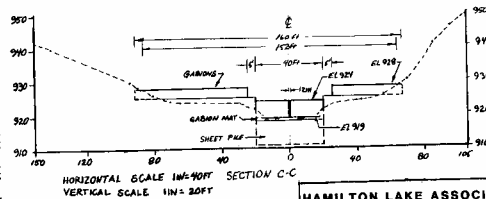
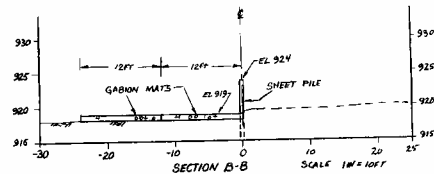
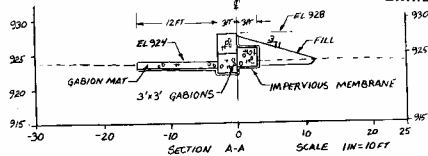
Additional information may be required for Site G and Site H. If necessary, a program of hand auger exploration developed on the basis of design requirements should be sufficient to supplement the existing data.

## EXHIBITS







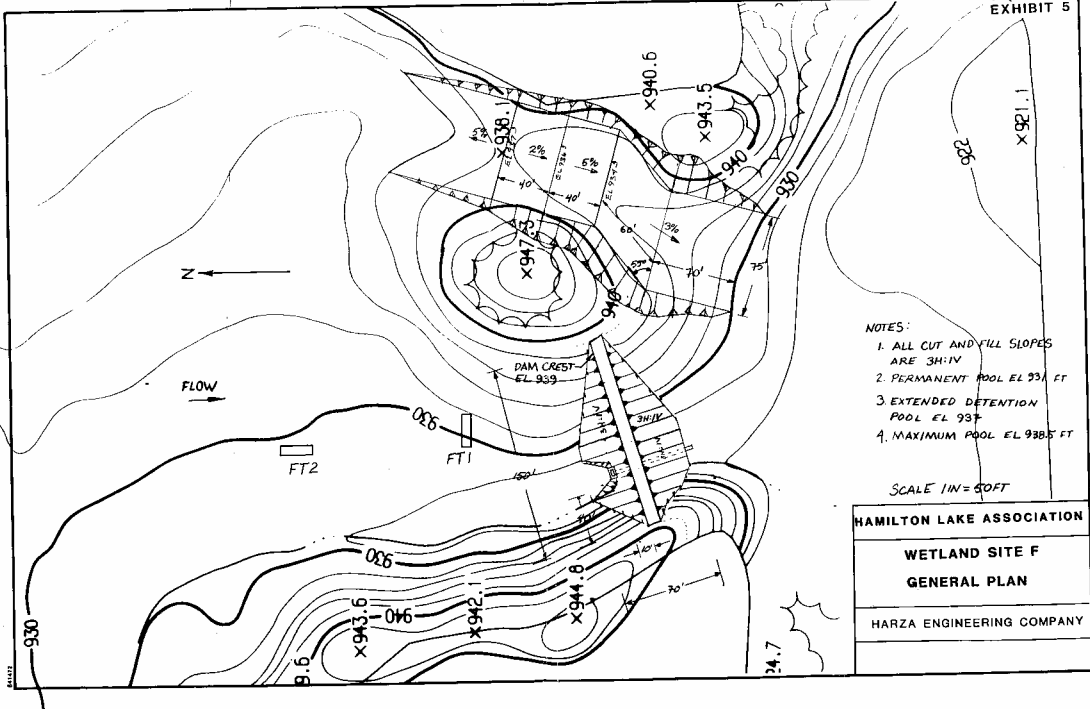


HAMILTON LAKE ASSOCIATION

WETLAND SITE E  
PLAN AND SECTIONS

HARZA ENGINEERING COMPANY

SCALE 1"=50' FT



## NOTES:

1. ALL CUT AND FILL SLOPES ARE 3H:1V
2. PERMANENT POOL EL 931 FT
3. EXTENDED DETENTION POOL EL 937
4. MAXIMUM POOL EL 938.5 FT

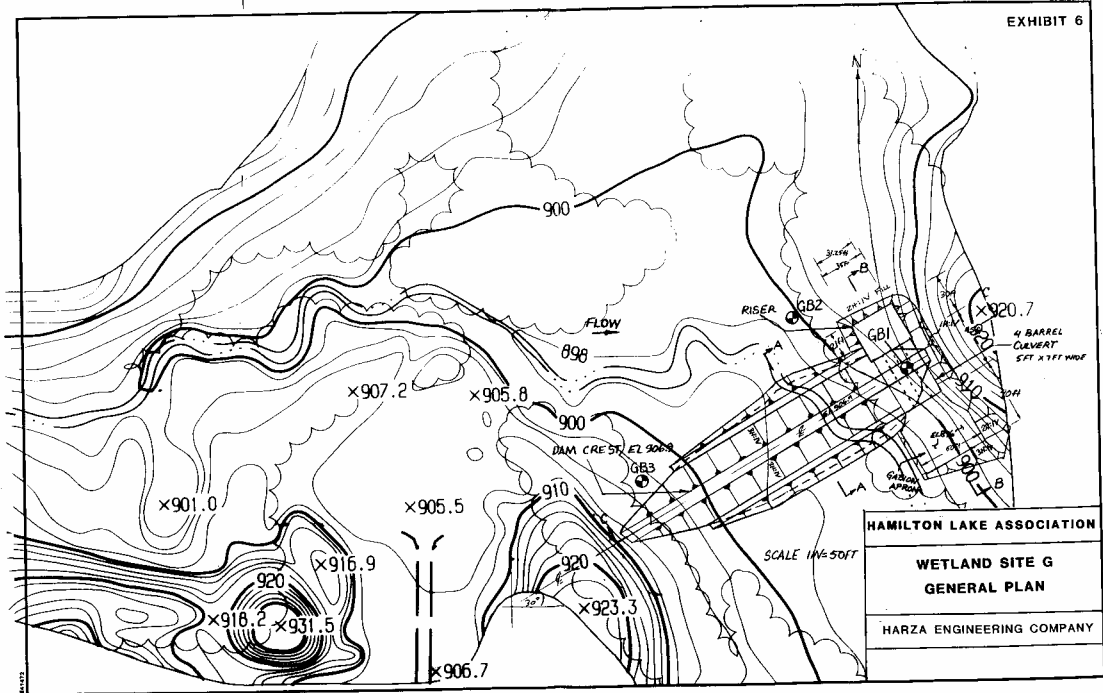
SCALE 1"=50 FT

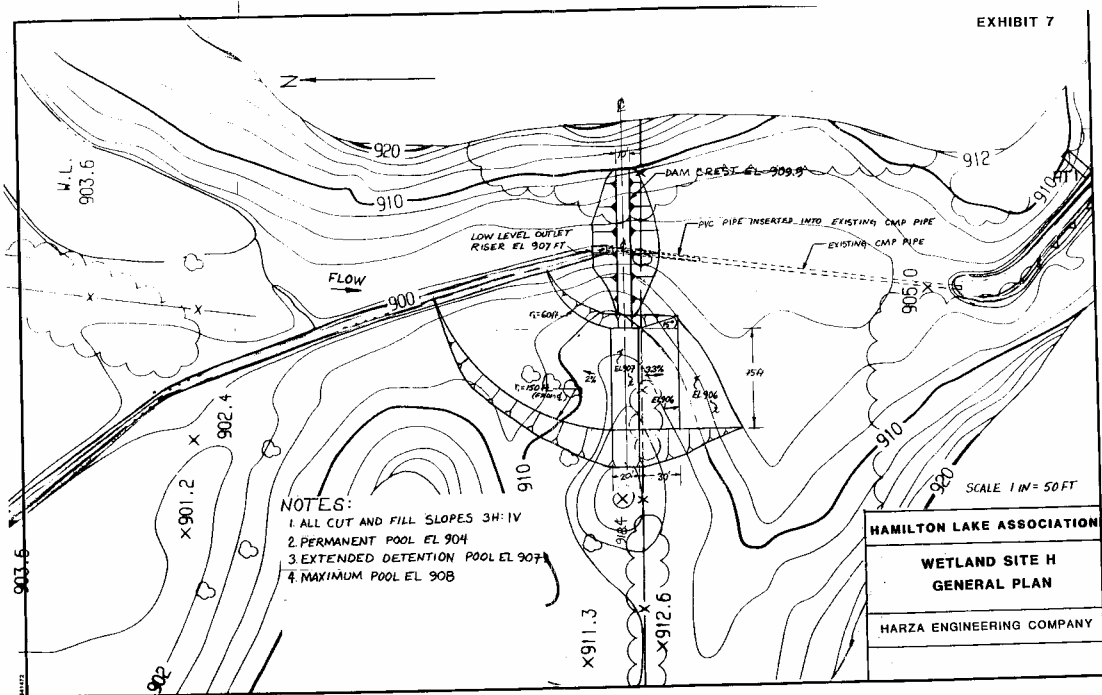
HAMILTON LAKE ASSOCIATION

WETLAND SITE F  
GENERAL PLAN

HARZA ENGINEERING COMPANY







## **APPENDIX A - SOIL BORING LOGS**

## SOIL BORING LOG

Project Number 52576  
Client HAMILTON LAKE HSIDEProject Name HAMILTON LAKEBoring No. AB1Location RT SIDE OF CREEKCoordinates: N AT SITE OFPROPOSED DAMGround Elevation 257Total Depth 19 ftDate Started 7/31/91Date Completed 7/31/91Drilling Method SPTHole Size 6" - 4 1/2" HALL AMESDriller PAUL RAMONDELogged by CM BROWN, HARZASample Hammer: Weight 140 LBDrop 30 INSampler Dimensions 2 ft split spoon

Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	SOIL DESCRIPTION	NOTES AND FIELD TESTS
Surface Conditions:										
0									edge of beanfield	
1		AB1	SS	5	12"				tan clayey silt	
2										
3				7						
4		42	SS	8	18"				dry gray clay, some silt	packet reaction 24.5 t <sub>sf</sub> 24.5 t <sub>sf</sub> 24.5 t <sub>sf</sub>
5										
6		53	SS	8	18"				dry very stiff silty clay	4.25 t <sub>sf</sub> 4.25 t <sub>sf</sub> 4.25 t <sub>sf</sub>
7				9						
8		54	SS	4	0"				no recovery.	
9				4						
10										
11		55	SS	3	18"				Soft gray clay	1.0 t <sub>sf</sub> 1.5 t <sub>sf</sub> 1.5 t <sub>sf</sub>
12				7					black pebble and sand	
13				7					Soft gray clay	
14		56	SS	5	18"				stiff gray clay	14.5 t <sub>sf</sub> 4 t <sub>sf</sub> 4.5 t <sub>sf</sub>
15				8						
16		57	SS	4	12"			CL	med gray clay	
17				9				SC	dk gray fine gravel and med-coarse SAND w/ clay matrix	
18		58	SS	14	15"				gray gravelly clay	
19				14					dk gray clayey, pebbly, SAND	
20									EOB - 19 feet	

brown silt content -  
gray clay content - mc

## SOIL BORING LOG

Project Number 52576  
 Client HAMILTON LAKE ASSOC.  
 Contractor RAIMONDE & SONS  
 Drilling Method SPLIT SPIN  
 Hole Size \_\_\_\_\_  
 Driller P. RAIMONDE  
 Logged by CMB

Project Name HAMILTON LAKE

WATER LEVEL	8 1/2'	15'	
TIME	6 PM	7 PM	
DATE	8/7	8/7	

Boring No. AB2  
 Location Left Abutment  
 Coordinates: N \_\_\_\_\_  
 E \_\_\_\_\_  
 Ground Elevation 957.4  
 Total Depth 24 ft  
 Date Started Aug 7, 1991  
 Date Completed 8/2/91

Sample Hammer: Weight 140 lb  
 Drop 30 in  
 Sampler Dimensions 2 ft split spoon

									SOIL DESCRIPTION	NOTES AND FIELD TESTS
Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	Surface Conditions:	
0									edge of beanfield	
1		51	SS	4		12"			dk gray clayey silt	
2				6						
3		52	SS	3		15"			red and gray mottled silty clay	Pocket Penet 3.75 tsf
4				6						
5				7						
6		53	SS	5		10"			soft gray clay	1.75 tsf
7				9					<del>gray coarse sand w/ clay + fine gravel</del>	
8				9					soft gray clay	
9		54	SS	14		15"			stiff gray clay	4.5 tsf
10				15					med - soft gray clay	2 tsf
11				14						
12		55	SS	12		18"			soft gray clayey silt	
13				14					soft SANDY silt	51 tsf
14				15						
15		56	SS	14		18"			gray stiff silty clay	4.25 tsf
16				13						
17				12					(water level after drilling)	
18										
19		57	SS	8		18"			gray silty clay	4.5 tsf
20				13						
21				22					gray clay	3.0 tsf 2.5 tsf

Project Number \_\_\_\_\_  
Client \_\_\_\_\_  
Contractor \_\_\_\_\_  
Drilling Method \_\_\_\_\_  
Hole Size \_\_\_\_\_  
Driller \_\_\_\_\_  
Logged by \_\_\_\_\_

Boring No. FDC  
Location \_\_\_\_\_  
Coordinates: N \_\_\_\_\_  
E \_\_\_\_\_  
Ground Elevation \_\_\_\_\_  
Total Depth \_\_\_\_\_  
Date Started \_\_\_\_\_  
Date Completed \_\_\_\_\_

WATER LEVEL			
TIME			
DATE			

Sample Hammer: Weight \_\_\_\_\_  
Drop \_\_\_\_\_  
Sampler Dimensions \_\_\_\_\_

Depth (ft/m)		Sample Depth (ft/m)		Sample No.		Sampler Type		Blows per 6 in/15 cm		Length Driven (in/cm)		Length Recovered (in/cm)		Casing Depth (ft/m)		Unified Soil Classification		SOIL DESCRIPTION		NOTES AND FIELD TESTS	
Surface Conditions:																					
20																					
21																					
22																					
23									10									gray hard silty clay			
24				SB	SS			13				14"						24.5' sf			
								22										24.5' sf			
																		4.0' sf			
																		EOB 24.5'.			

## SOIL BORING LOG

Project Number 52576Project Name HAMILTON LAKE ENH.Boring No. EB-1Client HAMILTON LAKE ASSOCIATIONLocation LOT 4 ADJUTMENTContractor RAIMONDE & SONS

Coordinates: N \_\_\_\_\_

Drilling Method SPLIT SPDRN

E \_\_\_\_\_

Hole Size 4 1/2 IN ID Hollow AugerSample Hammer: Weight 140 LBGround Elevation 940 ftDriller P. RAIMONDEDrop 30 INTotal Depth 24 ftLogged by CMBSampler Dimensions 2 IN SPLIT SPDRNDate Started 8/7/91Date Completed 8/7/91

Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	SQL DESCRIPTION	NOTES AND FIELD TESTS
									Surface Conditions:	
0									<del>Raspberry Fern</del> <del>thin layer organic sandy silty soil</del>	
1		S-1	SS	15 18	18"	10"	0'	ML	brown clay silt with some-trace gravel	
2									may have pushed gravel	
3		S-2	SS	18 15	18"	0"	23'			
4				12						
5				9	18"	10"	5'	GM	lt brown to white, gravel and silt	
6		S-3	SS	7					some SAND gravel is sub rounded	
7				7						
8		S-4	SS	14 13	18"	14"	7.5'	ML	yellow dry silt	
9				14					= fingered thin gravel	
10										
11		S-5	SS	8 8	18"	16"	10'		gray/white fine gr SAND	
12				8					lt gray fine gravelly med to coarse SAND subangular to sub rounded fine gravel	
13		S-6	SS	12 7	18"	18"	12'	SC	brown fine gravelly med to coarse SAND w/ clay clasts AND some clay matrix	
14				7					cobbles or gravel	
15										fingered thin
16										
17									yellow silt	
18		S-7	SS	16 13	18"	15"	17.5'	ML SM	yellow silty SAND w/ silt lenses 2" thick	
19				13						

## SOIL BORING LOG

Project Number \_\_\_\_\_

Project Name \_\_\_\_\_

Client \_\_\_\_\_

Contractor \_\_\_\_\_

Drilling Method \_\_\_\_\_

Hole Size \_\_\_\_\_

Driller \_\_\_\_\_

Logged by CMB

Sample Hammer: Weight \_\_\_\_\_

Drop \_\_\_\_\_

Sampler Dimensions \_\_\_\_\_

Boring No. EB1Location Left about road

Coordinates: N \_\_\_\_\_

E \_\_\_\_\_

Ground Elevation \_\_\_\_\_

Total Depth \_\_\_\_\_

Date Started \_\_\_\_\_

Date Completed \_\_\_\_\_

Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	SOIL DESCRIPTION	NOTES AND FIELD TESTS
									Surface Conditions:	
20				13					white sandy silt white silty SAND - 7 -	
21		58	SS	16	18	12"				
22				18						
23		59	SS	12					white silty fine SAND EOB 24'	
24				14	18	12"				
25				12						



Project Number 52576  
Client HAMILTON LAKE ASSOC  
Contractor RAYMONDE DRILLING  
Drilling Method SPT  
Hole Size 6 IN.  
Driller P. RAYMONDE  
Logged by CMB, HARZA

Project Name HAMILTON LAKE

WATER LEVEL	4 ft		
TIME	3 pm		
DATE	5/2/91		

Boring No. EB 2  
Location Stream bed NE of 14th  
Coordinates: N \_\_\_\_\_  
E \_\_\_\_\_  
Ground Elevation 920 ft  
Total Depth 14 ft  
Date Started Aug 7, 1991  
Date Completed Aug 3, 1991

SOIL DESCRIPTION									NOTES AND FIELD TESTS
Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	Surface Conditions:
0	1	EB2		1	18"	10"			3W gravel in stream bed
1	2	51	SS	9	18"	10"		SC	brown sandy clay
2									
3			SS	10	18"	12"			yellow sandy clay
4			SS	13					w/ gravel
5									saturated sandy clay
6			SS	10	18"	12"			black silty fine sand to fine gravel
7				9					shale flakes w/ quite sand.
8			SS	15	18"	12"			gray hard clay
9			SS	11					
10									
11			SS	12	18"	0"			clay must have remained in hole
12			SS	15					
13			SS	6	18"	18"			half of sample gray clay
14			SS	8					half brown sandy clay
15				9					gray silt
16									EOB - 14 ft
17									
18									
19									

Pocket penetrometer

7.5 tcf

4.0 tcf

34.5 tcf

average ~ 7

Pocket

3.5 tcf

3.5 tcf

4.0 tcf

Pocket penetrometer

1 tcf

1 tcf

1 tcf

## SOIL BORING LOG

Project Number 52576  
Client HAMILTON LAKE ASSOCProject Name HAMILTON LAKEBoring No. GB-1  
Location Left abutment  
Coordinates: N (Proposed)  
E \_\_\_\_\_

Contractor \_\_\_\_\_

Drilling Method Split Spoon & Hollow Stem

Hole Size \_\_\_\_\_

Driller Phil RAINONDELogged by CM BROWNSample Hammer: Weight 140 LBDrop 30 INSampler Dimensions 2 IN Split SpoonGround Elevation 904  
Total Depth 24' 2"  
Date Started 8/6/91 4:30-6 PM  
Date Completed 8/6/91

SOIL DESCRIPTION									NOTES AND FIELD TESTS	
Surface Conditions:										
0									oak trees adjacent to boring, grass + other veg little to no topsoil	
6"		GB1	SS	3					dry yellow silty, fine SAND	
1		S1		5	18"	18"		SM		
				7						
2										
3		GB1	SS	12					moist yellow silty, fine sand	
		S2		6	18"	18"		SM		
4				5						
5				3						
6		S3	SS	3	18"	18"		SM	gray clayey 5% silty, 10% SAND sand is MORE coarse fine to med.	
				6						
7										
8		S4	SS	7					gray silty sand (fine to coarse SAND)	
				4	18"	18"		SM		
9				4						

# SOIL BORING LOG

Project Number \_\_\_\_\_

Project Name \_\_\_\_\_

Boring No. GB1

Client \_\_\_\_\_

WATER LEVEL			
TIME			
DATE			

Location \_\_\_\_\_

Contractor \_\_\_\_\_

Coordinates: N \_\_\_\_\_

Drilling Method \_\_\_\_\_

E \_\_\_\_\_

Hole Size \_\_\_\_\_

Sample Hammer: Weight \_\_\_\_\_

Ground Elevation \_\_\_\_\_

Driller \_\_\_\_\_

Drop \_\_\_\_\_

Total Depth \_\_\_\_\_

Logged by CMR

Sampler Dimensions \_\_\_\_\_

Date Started \_\_\_\_\_

Date Completed \_\_\_\_\_

Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	SOIL DESCRIPTION	NOTES AND FIELD TESTS
									Surface Conditions:	
10				6	18"	14			dark gray saturated clayey sand	
11		55	SS	6	18"	14		SC		
				5						
12										
13		56	SS	14	18"	14			gray saturated clayey sand	
14				5						
									soft brown silty fine sand	
15				10					Gray fine silty sand pungent odor	
16		57	SS	6	18"	16"				
				7						
17										
18		58	SS	15	18"	15"			gray silty fine to coarse sand = thin stack, clayey, silty, fine sand layer	
19				6						
									gray silty fine to coarse sand	

## SOIL BORING LOG

Project Number \_\_\_\_\_

Project Name \_\_\_\_\_

Client \_\_\_\_\_

Contractor \_\_\_\_\_

Drilling Method \_\_\_\_\_

Hole Size \_\_\_\_\_

Driller \_\_\_\_\_

Logged by \_\_\_\_\_

Sample Hammer: Weight \_\_\_\_\_

Drop \_\_\_\_\_

Sampler Dimensions \_\_\_\_\_

Boring No. GB1

Location \_\_\_\_\_

Coordinates: N \_\_\_\_\_

E \_\_\_\_\_

Ground Elevation \_\_\_\_\_

Total Depth \_\_\_\_\_

Date Started \_\_\_\_\_

Date Completed \_\_\_\_\_

Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	SOIL DESCRIPTION	NOTES AND FIELD TESTS
20				14					gray silty, fine to coarse SAND w/ small shale pebbles	
21		5 <sup>th</sup>	SS	6	18"	12"		SM		
				5						
22										
23				7					clean gray fine to coarse SAND	
		5 <sup>th</sup>	SS	6	18"	12"		SM		
24				6					EOB 24ft	

## 3

Ground Elevation 899  
Total Depth 15.5  
Date Started 8/6/91 3-4<sup>30</sup> PM  
Date Completed 8/6/91

Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification
SOIL DESCRIPTION								
NOTES AND FIELD TESTS								
Surface Conditions:								
0								4 ft grass and vegetation
6"		G82		1	18	0' 1"		black organic matter root band.
1'		S1 SS		1	18	only in tip SAND TIP		
2								
3		G83		1	18	0' 1"		No sample recovered
4		S2 SS		1	18	only in tip SAND TIP		
5								
6		G84		1	18	0' 1"		sample in tip was green/black organic residue w/ some med sand. Sample was soft as sour cream.
7		S3 SS		1	18	only in tip SAND TIP		
8								
9		G85		1	18	0' 1"		water washed sample out of split spoon. Sample in tip was dk gray silty, clayey, fine sand with roots and organic matter
10		S4 SS		1	18	only in tip SAND TIP		

## SOIL BORING LOG

Project Number \_\_\_\_\_

Project Name \_\_\_\_\_

Client \_\_\_\_\_

Contractor \_\_\_\_\_

Drilling Method SPLIT SPOON SAMPLERHole Size W/ 4 1/2" IDDriller P.R.Logged by CMB

Sample Hammer: Weight \_\_\_\_\_

Drop \_\_\_\_\_

Sampler Dimensions \_\_\_\_\_

Boring No. GB-2Location SITE G, CENTER

Coordinates: N \_\_\_\_\_

E \_\_\_\_\_

Ground Elevation \_\_\_\_\_

Total Depth 15 1/2

Date Started \_\_\_\_\_

Date Completed \_\_\_\_\_

SOIL DESCRIPTION									NOTES AND FIELD TESTS	
Surface Conditions:										
10									black organics	
11	55			1 1/2"	18	8"			grey silty 5% poorly graded very fine - fine sand.	
12				5/8"						
13	56			3	18	16			gray silty, very fine - fine SAND	
14	57			3	18	14			gray very fine to med SAND	
15				10					EOB 15.5 ft	

## SOIL BORING LOG

Project Number 52579  
 Client HAMILTON LAKE  
 Contractor RAIMONDE  
 Drilling Method SPLIT SPOON  
 Hole Size 4 1/2 ID  
 Driller Phil R. + Son  
 Logged by CR. BROWN

Project Name HAMILTON LAKE

WATER LEVEL	6	14
TIME	3pm	5pm
DATE	7/30/73	7/30

Boring No. GB-3  
 Location 316 - ADJUTMENT  
 Coordinates: N \_\_\_\_\_  
 E \_\_\_\_\_  
 Ground Elevation 24 ft  
 Total Depth 24  
 Date Started July 30, 1973 2:30pm  
 Date Completed \_\_\_\_\_

Sample Hammer: Weight 140 lb  
 Drop 30 in  
 Sampler Dimensions 2 in split spoon

									SOIL DESCRIPTION	NOTES AND FIELD TESTS
Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	Surface Conditions:	
0									DENSE <del>VEGETATION</del> VEGETATION, RASPBERRY AND OTHER 3-5' FT TALL	
1/2				1					NO RECOVERY - very soft black soil	
1		GB-3-SS1	SS	1	18	0				
1 1/2				0						
2										
3				1					very soft black soil	
3 1/2		GB-3-SS2	SS	1	18	21"				
4				1					WELL ROUNDED FINE SAND, SILT + GREY WITH SOME CLAY	
5				1						
6		GB-3-SS3	SS	1	18"	14"			soft black ORGANIC matter SOFT SPONGEY RED BROWN + BLACK	
7				1					WATER	
8									(AUGER LIFTED SATURATED GRAY SAND)	
9				0					DK gray clayey organic soil soft black organic matter	
9 1/2		GB-3-SS4	SS	0	18	13"				
10				2					SAND - fine to coarse gray SAND well ROUNDED	

## SOIL BORING LOG

Project Number 5257 9

Project Name \_\_\_\_\_

Boring No. 98-3

Client \_\_\_\_\_

WATER LEVEL			
TIME			
DATE			

Location 7th FLOORMENT

Contractor \_\_\_\_\_

Coordinates: N \_\_\_\_\_

Drilling Method \_\_\_\_\_

E \_\_\_\_\_

Hole Size \_\_\_\_\_

Sample Hammer: Weight \_\_\_\_\_

Ground Elevation \_\_\_\_\_

Driller \_\_\_\_\_

Drop \_\_\_\_\_

Total Depth \_\_\_\_\_

Logged by \_\_\_\_\_

Sampler Dimensions \_\_\_\_\_

Date Started \_\_\_\_\_

Date Completed \_\_\_\_\_

Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	SOIL DESCRIPTION	NOTES AND FIELD TESTS
									Surface Conditions:	
10				23					gray clay with organics	
11				11	18	18"			fine to coarse sandy clay - yellow color	
				8					yellow clayey, silty, fine to coarse sand - gravelly yellow sand in stringers if	
12				5					sand, clay some organics	
13				15	18	18"			yellow gravelly med-coarse sand	
14				13					14 grey-yellow gravelly sand w/ clay matrix	2 samples
15				12	18	18"			yellow/dense clay	
16				9					fine - med gravel sub angular to well rounded	
17				10	18	18"			gravelly sandy clay	
18				11					orange med-coarse well rounded sandy	
19				8						



## SOIL BORING LOG

Project Number \_\_\_\_\_

Project Name HAMILTON LAKEBoring No. GB-3

Client \_\_\_\_\_

Location \_\_\_\_\_

Contractor \_\_\_\_\_

Coordinates: N \_\_\_\_\_

Drilling Method \_\_\_\_\_

E \_\_\_\_\_

Hole Size \_\_\_\_\_

Sample Hammer: Weight \_\_\_\_\_

Ground Elevation \_\_\_\_\_

Driller PHIL RAIMONDE

Drop \_\_\_\_\_

Total Depth \_\_\_\_\_

Logged by C. M. BROWN

Sampler Dimensions \_\_\_\_\_

Date Started \_\_\_\_\_

Date Completed \_\_\_\_\_

Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	SOIL DESCRIPTION	NOTES AND FIELD TESTS
									Surface Conditions:	
20				12					med-coarse rounded sand	
21				14						
22				14					coarse silt to fine sand very well rounded	
23				11						
24				9					coarse sand yellow sand w/ some silt and clay	
25				11						
26									2' clay, fine-med sand EOB 24 ft  at completion of drilling, water level at 14.21	

## **APPENDIX B - TEST PIT LOGS**

Project Number 50379  
Client HAMILTON LAKE ACSSO  
Contractor BUTLER + BUTLER  
Drilling Method BACKHOE  
Hole Size \_\_\_\_\_  
Driller BOB RICHMAN  
Logged by CMBROWN

Project Name Hamilton Lake

Boring No. AT1  
Location BELLEVUE RT ADJUTMENT  
Coordinates: N \_\_\_\_\_  
E \_\_\_\_\_  
Ground Elevation 954.5 ft  
Total Depth 11  
Date Started 2/31/91  
Date Completed 2/31/91

WATER LEVEL	8'		
TIME	10:00		
DATE	7/31/91		

Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	SOIL DESCRIPTION	NOTES AND FIELD TESTS
0									no vegetation, beans nearby	
1									dk gray, topsoil	
2									ML-CL	
3	X	AT-5	BS						mottled yellow/gray silty clay.	X SAMPLE
4										
5										
6									gravelly, clayey, silty sand	
7	X	AT-6	BS						20% 20% 20% 40%	
8									gravel up to 1 1/2 inch - 2 inch	X SAMPLE
9									<u>                    </u>	
10									gravelly clayey fine-coarse sand	
11									15% 25% 60%	
									<u>EO Test Pit</u>	

Boring No. AT-2  
Location S-13 A, HANCOCK DIR.  
Coordinates: N W 1/2 R 16 E  
E \_\_\_\_\_  
Ground Elevation 953.3  
Total Depth 14 ft  
Date Started JULY 31  
Date Completed JULY 31

WATER LEVEL			
TIME			
DATE			

[illegible]

Boring No. BT-1  
Location RT SIDE W CREEK  
Coordinates: N \_\_\_\_\_  
E \_\_\_\_\_  
Ground Elevation 965 FT  
Total Depth 13 FT  
Date Started July 31  
Date Completed July 31

[illegible]

# TEST PIT SOIL BORING LOG

Project Number 52576  
 Client HAMILTON LAKE PARK  
 Contractor BUTLER + BUTLER  
 Drilling Method BACKHOE

Project Name HAMILTON LAKE

WATER LEVEL			
TIME			
DATE			

Boring No. BT-2  
 Location SITE B - CENTRAL PARK  
 Coordinates: N along fence  
 E \_\_\_\_\_

Hole Size \_\_\_\_\_ Sample Hammer: Weight \_\_\_\_\_  
 Driller BOB RICHMAN Drop \_\_\_\_\_  
 Logged by CMB Sampler Dimensions \_\_\_\_\_

Ground Elevation 966  
 Total Depth 13 ft  
 Date Started 7/31/91  
 Date Completed 7/31/91

Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	SOIL DESCRIPTION	NOTES AND FIELD TESTS
Surface Conditions:										
0									trees + wild grapes along fence	
1									black topsoil	
2										
3									layer or lens of gravelly (10%) silty clay	
4									<u>SAND</u> LENSE poorly graded med sand	DISCONTINUOUS
5									dk gray hard silty clay	
6		X 51 BS							<u>SAND</u> LENSE	
7		X 52 BS							dk gray clayey silt to silty clay	
8										
9										
10										
11										
12										
13									EO TEST PIT 13 FT	

Boring No. ET1  
Location left side of creek  
Coordinates: N \_\_\_\_\_  
E \_\_\_\_\_  
Ground Elevation 926  
Total Depth 11.84  
Date Started 7/31  
Date Completed 7/31/91

WATER LEVEL	7 1/2'		
TIME	2 PM		
DATE	7/31		

[illegible]

Boring No. FT-1  
Location SIZE F  
Coordinates: N         
                  E         
Ground Elevation 930  
Total Depth 12 ft  
Date Started 8/3/91  
Date Completed 8/2/91

[illegible]



Project Number 52577  
Client HAMILTON LAKE ASSOC.  
Contractor BUTLER + BUTLER  
Drilling Method BACK HOE  
Hole Size             
Driller BOB RICHMAN  
Logged by CM BROWN

Project Name HAMILTON LAKE

WATER LEVEL	8		
TIME	94m		
DATE	8/2/91		

Boring No. ET 2  
Location CENTER OF SITE  
Coordinates: N \_\_\_\_\_  
E \_\_\_\_\_  
Ground Elevation 930  
Total Depth 12 ft  
Date Started AUG 7 1991  
Date Completed AUG 2, 1991

[illegible]

Boring No. 4/T-1  
Location left side of creek  
Coordinates: N 4/5 of Dam  
E \_\_\_\_\_  
Ground Elevation \_\_\_\_\_  
Total Depth 10ft  
Date Started 7/31/91  
Date Completed 7/31/91

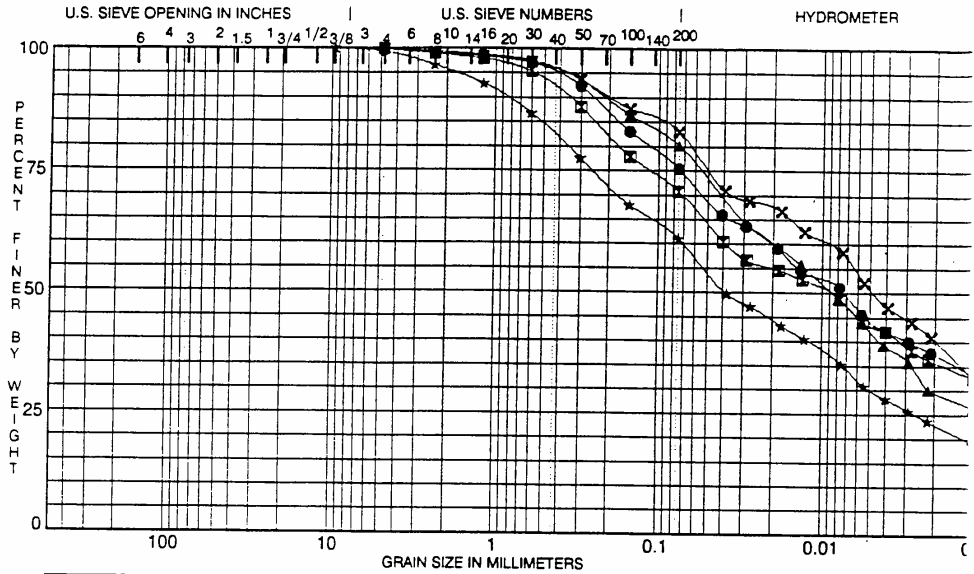
Depth (ft/m)	Sample Depth (ft/m)	Sample No.	Sampler Type	Blows per 6 in/15 cm	Length Driven (in/cm)	Length Recovered (in/cm)	Casing Depth (ft/m)	Unified Soil Classification	SOIL DESCRIPTION	NOTES AND FIELD TESTS
									Surface Conditions:	
0									grass	
1								ML	Dark brown Topsoil / silty ngne S	
2										
3								CL	yellow/gray clayey sand	
4									Sub angular silt to fine SAND	
5										
6	X	HT 52	LARGE BAG SAMPLE					SP	yellow brown fine to med SAND	
7										
8										
9									sand began to collapse into PIT.	
10									EOB - 10' 6"	

## **APPENDIX C - GRAIN SIZE CURVES**

Job No.

Date 9.9.91

Project HAMILTON LAKE ENHANCEMENT -



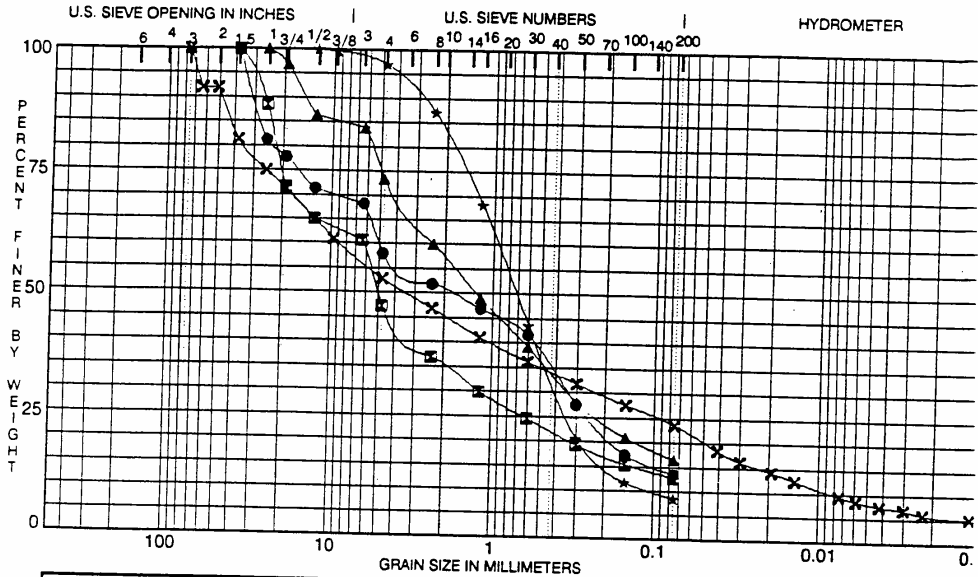
COBBLES			GRAVEL		SAND			SILT OR CLAY				
			coarse	fine	coarse	medium	fine					
Specimen Identification			Classification				MC%	LL	PL	PI	Cc	
●	AB1-S1	0.0	LEAN CLAY with SAND CL				15	35	22	13		
⊠	AB1-S2	0.0	LEAN CLAY with SAND CL				15	38	20	18		
▲	AB2-S1	0.0	SILT with SAND ML				20	41	27	14		
★	B-CREEK	0.0	SANDY LEAN CLAY CL				38	31	22	9		
×	BT1-S1	0.0	SILT with SAND ML				26	41	33	8		
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	AB1-S1	0.0	4.75	0.02			0.0	24.7	31.0	44.3		
⊠	AB1-S2	0.0	4.75	0.04			0.0	29.3	27.3	43.4		
▲	AB2-S1	0.0	4.75	0.02	0.002		0.0	19.9	37.9	42.2		
★	B-CREEK	0.0	9.50	0.07	0.005		0.6	38.4	31.0	30.0		
×	BT1-S1	0.0	4.75	0.01			0.0	17.0	32.2	50.8		

## GRADATION CURVES

Job No.

Date 9.9.91

Project HAMILTON LAKE ENHANCEMENT -



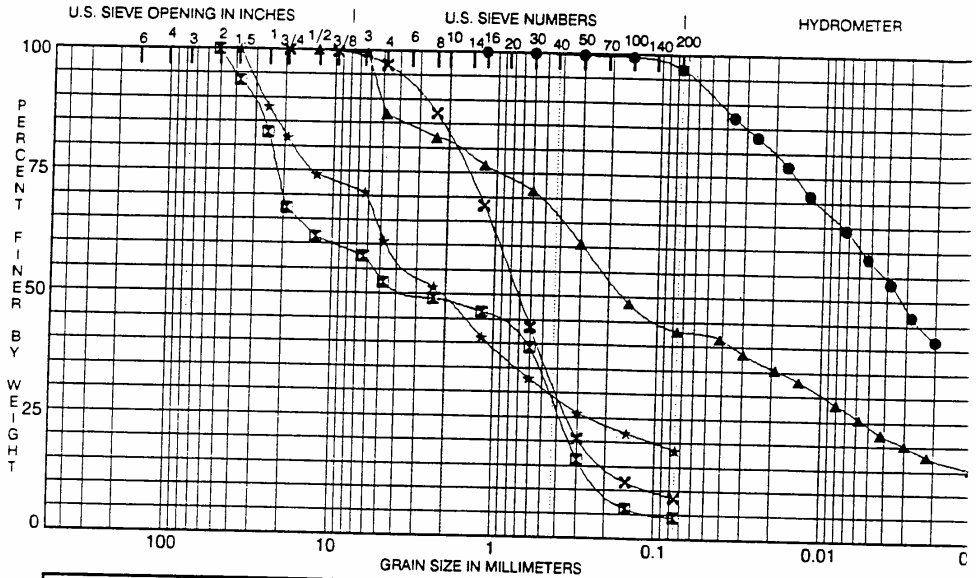
COBBLES		GRAVEL		SAND			SILT OR CLAY						
		coarse	fine	coarse	medium	fine							
Specimen Identification			Classification					MC%	LL	PL	PI	Cc	C
●	EB2-S1	0.0						20					
⊠	EB2-S2	0.0						8					
▲	EB2-S3	0.0						13					
★	EBI-S5	0.0						4				1.62	9.
×	ET1-S2	0.0	SILTY GRAVEL with SAND GM					12	17	15	3		
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay		
●	EB2-S1	0.0	37.50	5.02	0.339		42.0	44.5	13.5				
⊠	EB2-S2	0.0	37.50	6.21	1.192		52.8	34.5	12.7				
▲	EB2-S3	0.0	25.00	2.36	0.340		26.7	56.9	16.4				
★	EBI-S5	0.0	12.50	0.94	0.399	0.1038	3.0	88.5	8.5				
×	ET1-S2	0.0	75.00	8.80	0.225	0.0083	47.2	29.2	15.5		8.1		

## GRADATION CURVES

Job No.

Date 9.9.91

Project HAMILTON LAKE ENHANCEMENT



COBBLES	GRAVEL		SAND			SILT OR CLAY	
	coarse	fine	coarse	medium	fine		

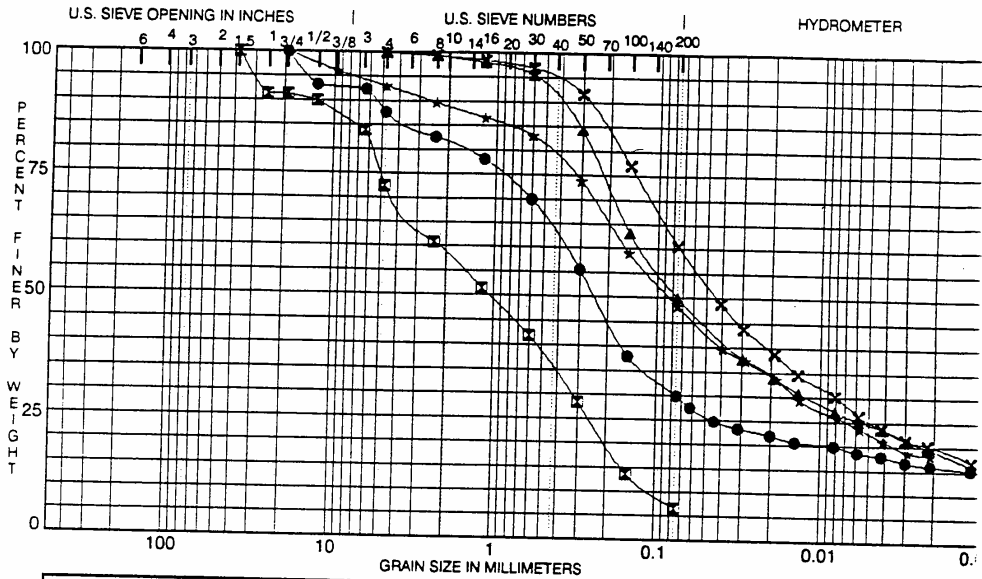
Specimen Identification			Classification				MC%	LL	PL	PI	Cc	C
●	BT2-S2	0.0	LEAN CLAY CL				28	36	22	14		
⊠	E-CREEK	0.0					11				0.11	50
▲	EB1-S1	0.0					7					
*	EB1-S3	0.0					4					
⊗	EB1-S5	0.0					4				1.62	9
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	BT2-S2	0.0	1.18	0.01	0.001		0.0	3.0	39.4	57.6		
⊠	E-CREEK	0.0	50.00	9.76	0.455	0.1952	47.6	47.9	4.5			
▲	EB1-S1	0.0	12.50	0.29	0.010		13.2	43.7	19.0	24.1		
*	EB1-S3	0.0	37.50	4.51	0.450		39.3	42.3	18.4			
⊗	EB1-S5	0.0	19.00	0.94	0.399	0.1038	3.0	88.5	8.5			

## GRADATION CURVES

Job No.

Date 9.9.91

Project HAMILTON LAKE ENHANCEMENT -



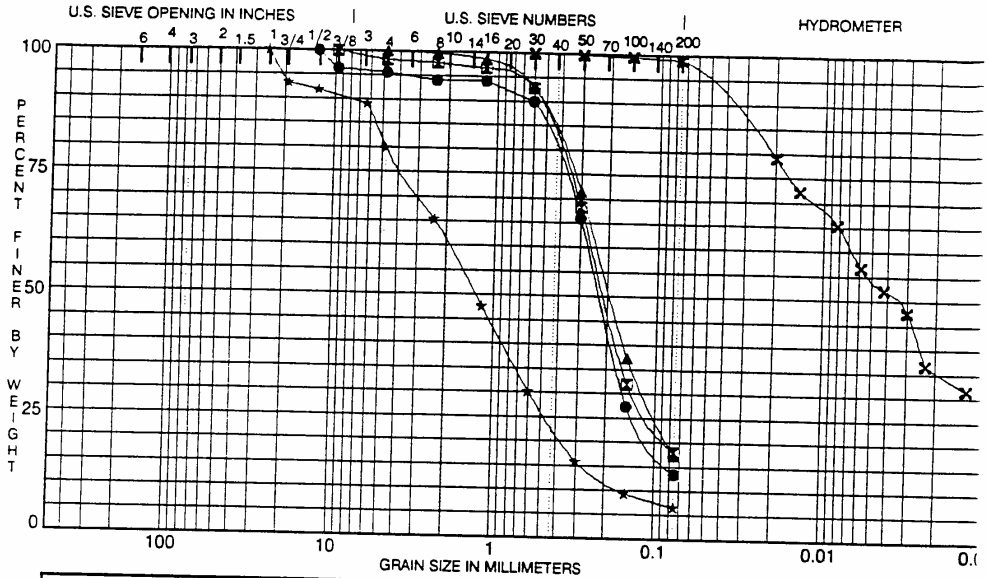
COBBLES		GRAVEL		SAND			SILT OR CLAY					
		coarse	fine	coarse	medium	fine						
Specimen Identification			Classification				MC%	LL	PL	PI	Cc	Cu
●	FT1-S1	0.0	CLAYEY SAND SC				13	26	16	10		
⊠	FT1-S2	0.0					13				0.46	21.
▲	FT2-S1	0.0	SANDY SILT ML				20	25	23	2		
*	FT2-S2	0.0	CLAYEY SAND SC				19	28	16	12		
⊗	FT2-S3	0.0	SANDY LEAN CLAY CL				15	27	20	7		
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	FT1-S1	0.0	19.00	0.37	0.076		12.4	57.7	11.6		18.3	
⊠	FT1-S2	0.0	37.50	2.21	0.327	0.1045	27.7	65.6	6.7			
▲	FT2-S1	0.0	4.75	0.13	0.012		0.0	50.0	25.6		24.4	
*	FT2-S2	0.0	19.00	0.16	0.014		7.0	44.7	25.8		22.5	
⊗	FT2-S3	0.0	4.75	0.07	0.008		0.0	39.4	35.5		25.1	

GRADATION CURVES

Job No.

Date 9.9.91

Project HAMILTON LAKE ENHANCEMENT -



COBBLES	GRAVEL		SAND			SILT OR CLAY			
	coarse	fine	coarse	medium	fine				

Specimen Identification			Classification				MC%	LL	PL	PI	Cc	Cu
●	GB1-S1	0.0					3					
⊠	GB1-S2	0.0					6					
▲	GB1-S3	0.0					22					
★	GB3-S6	0.0					13				1.15	12.0
⊗	H-CREEK	0.0	ELASTIC SILT MH				115	95	41	54		
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	GB1-S1	0.0	12.50	0.27	0.158		4.4	82.2	13.4			
⊠	GB1-S2	0.0	9.50	0.26	0.136		1.7	80.3	18.0			
▲	GB1-S3	0.0	4.75	0.24	0.117		0.0	82.7	17.3			
★	GB3-S6	0.0	25.00	1.92	0.594	0.1601	20.1	73.2	6.7			
⊗	H-CREEK	0.0	0.60	0.01			0.0	1.1	44.4		54.5	

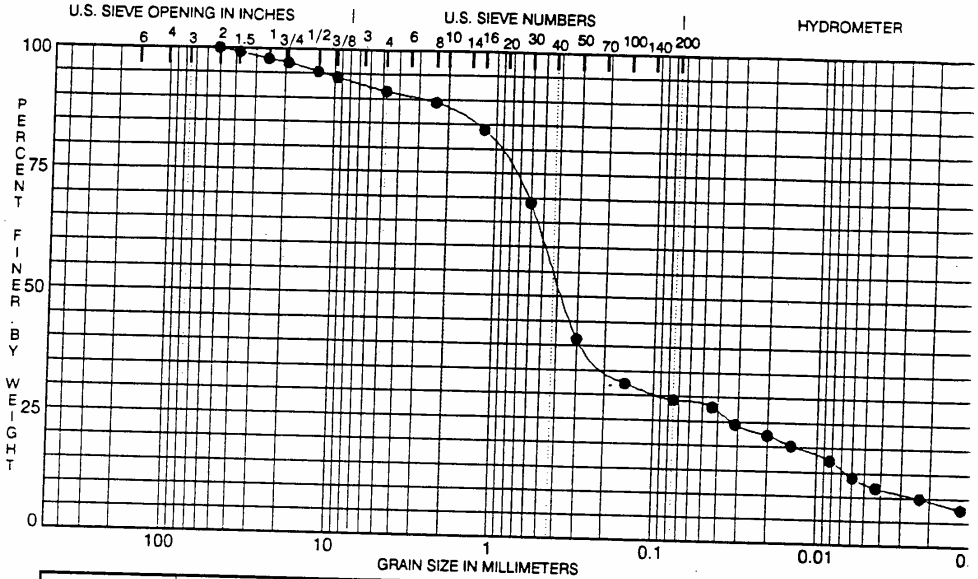
## GRADATION CURVES



Job No.

Date 9.9.91

Project HAMILTON LAKE ENHANCEMENT -



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification				MC%	LL	PL	PI	Cc	C
●	HT1-S2	0.0	SILTY SAND SM				23	21	20	1		
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	HT1-S2	0.0	50.00	0.48	0.089	0.0024	8.5	62.3	16.3		12.9	

GRADATION CURVES

## **APPENDIX D - LABORATORY TEST DATA**

Job No. \_\_\_\_\_ Date 9.9.91  
 Project HAMILTON LAKE ENHANCEMENT

Source of Material \_\_\_\_\_  
 Description of Material \_\_\_\_\_  
 Test Method \_\_\_\_\_

## TEST RESULTS

Maximum Dry Density 128.5 PCF  
 Optimum Water Content 8.8 %

## ATTERBERG LIMITS

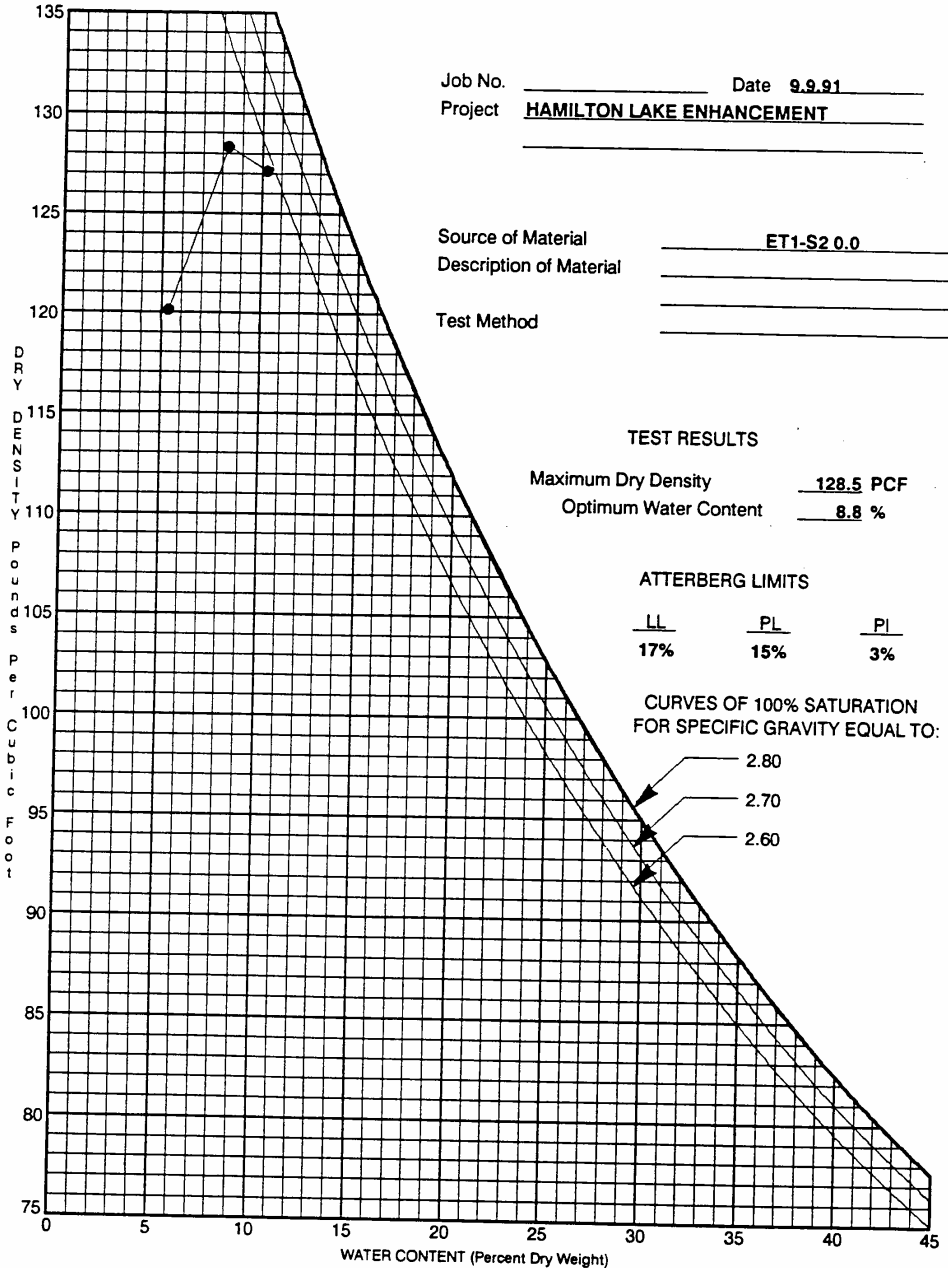
LL	PL	PI
17%	15%	3%

CURVES OF 100% SATURATION  
 FOR SPECIFIC GRAVITY EQUAL TO:

2.80

2.70

2.60



**MOISTURE-DENSITY RELATIONSHIP**

Job No. \_\_\_\_\_ Date 9.9.91

Project HAMILTON LAKE ENHANCEMENT

Source of Material FT2-S3 0.0

Description of Material \_\_\_\_\_

Test Method \_\_\_\_\_

## TEST RESULTS

Maximum Dry Density 104.4 PCF

Optimum Water Content 16.0 %

## ATTERBERG LIMITS

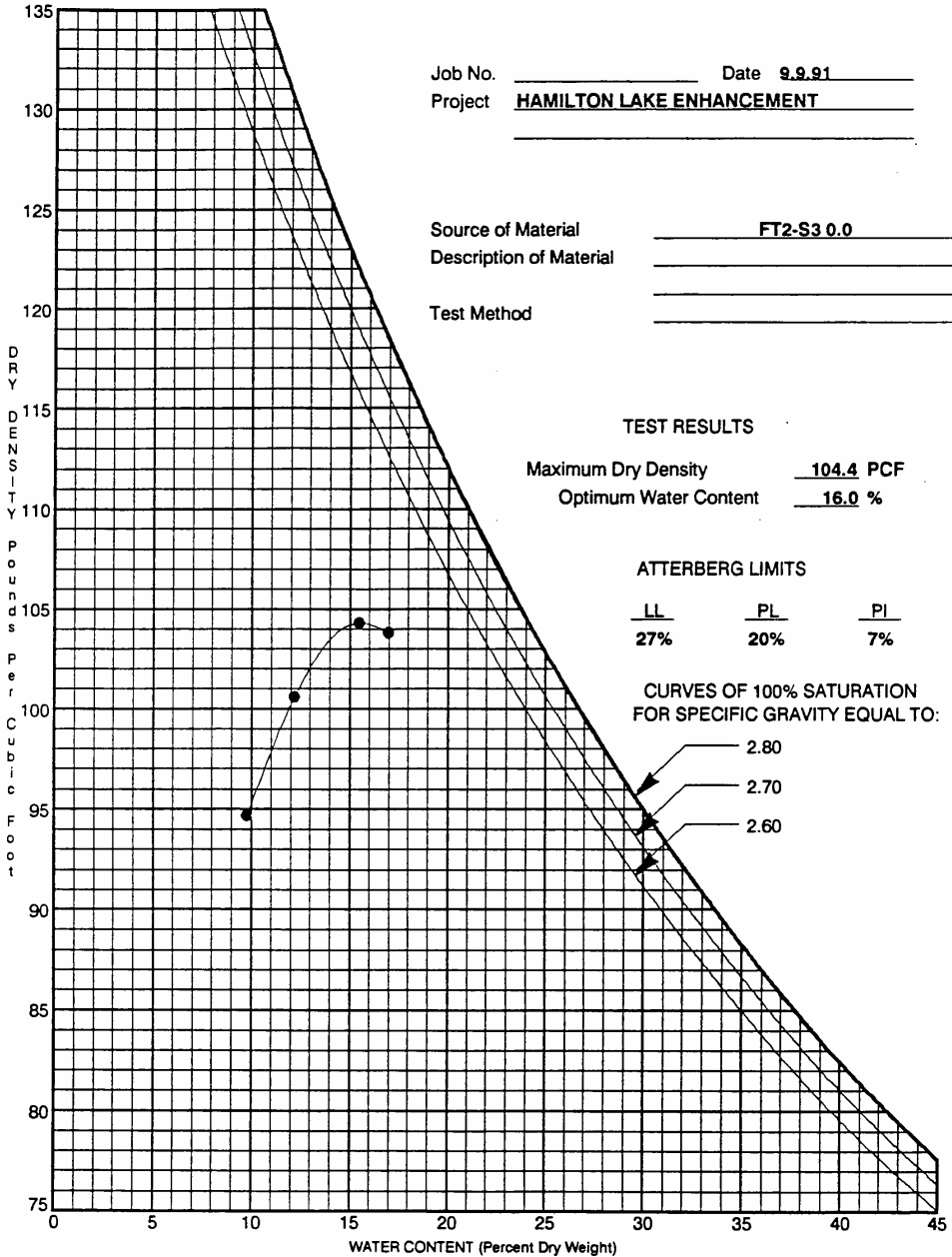
LL	PL	PI
27%	20%	7%

CURVES OF 100% SATURATION  
FOR SPECIFIC GRAVITY EQUAL TO:

2.80

2.70

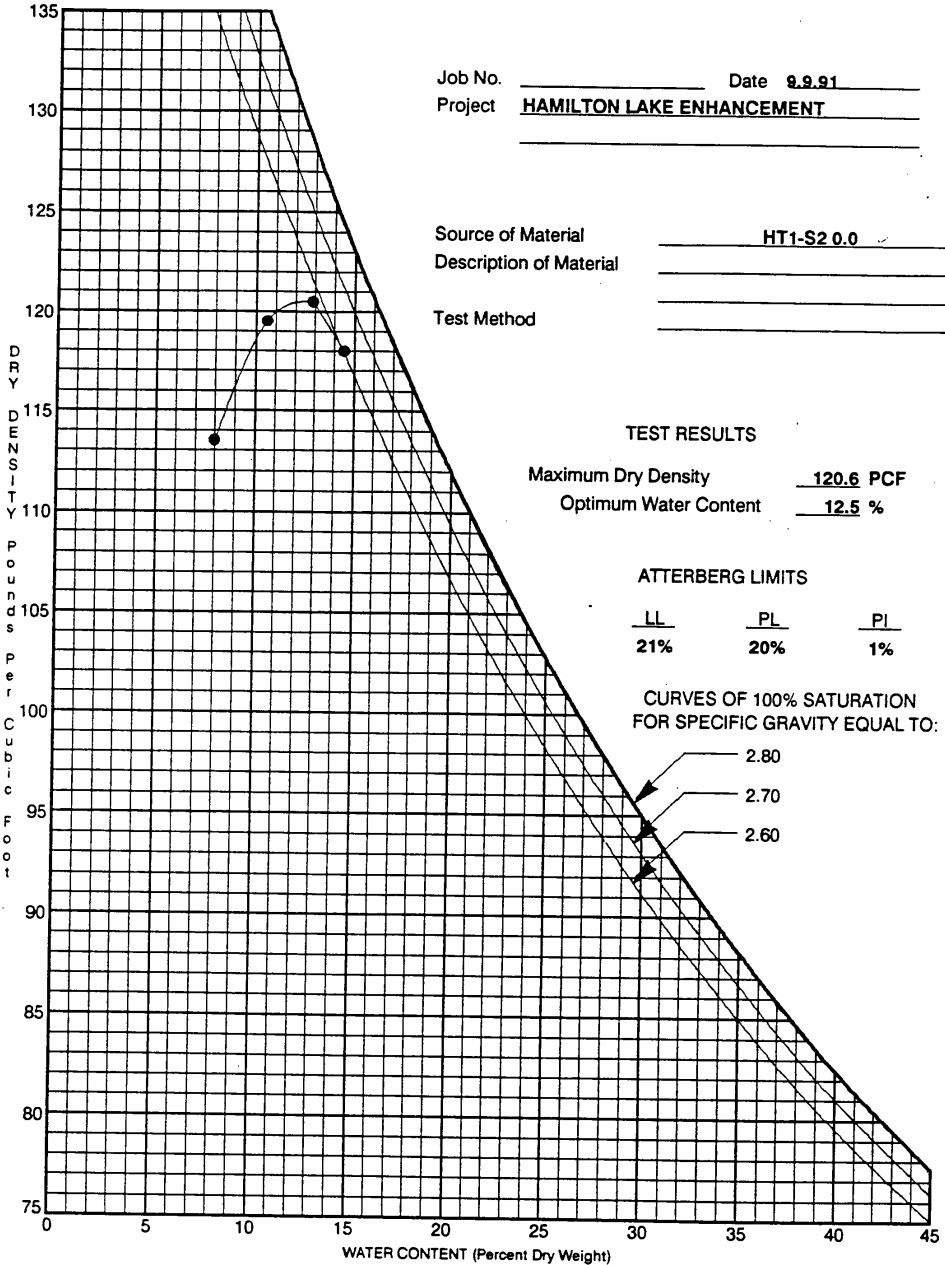
2.60



**MOISTURE-DENSITY RELATIONSHIP**

Job No. \_\_\_\_\_ Date 9.9.91  
 Project HAMILTON LAKE ENHANCEMENT

Source of Material \_\_\_\_\_  
 Description of Material \_\_\_\_\_  
 Test Method \_\_\_\_\_



**MOISTURE-DENSITY RELATIONSHIP**

PART 10 - DRAWINGS

Sheet 1 - Cover Sheet and Area Map

Sheet 2 - Wetland Structure

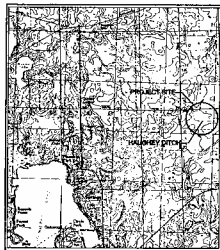
5-11-99

# HAMILTON LAKE ASSOCIATION, INC.

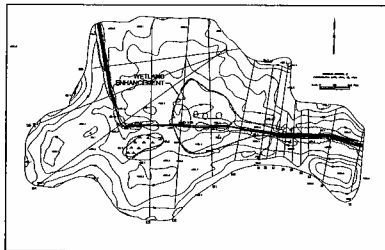
## HAMILTON, INDIANA

# HAMILTON LAKE WETLAND ENHANCEMENT PROJECT

August 1999



AREA MAP



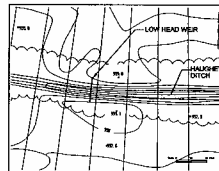
WETLAND ENHANCEMENT AREA MAP

### NOTES:

1. THE STEEL SHEET PILE SHALL BE 12" (305) ASTM A588 CARBON GRADE OR EQUAL, SEE TYPICAL SECTION ON SHEET 2.
2. THE ALIGNMENT OF THE CONTROL STRUCTURE IS APPROXIMATELY PERPENDICULAR TO THE CENTER LINE OF HALLSNEY DITCH. THE FINAL ALIGNMENT SHALL BE ADJUSTED TO AN ALIGNMENT THAT WILL PROVIDE THE MOST BUT NOT LESS FOUNDATION FOR THE STRUCTURE AND ACCEPTABLE FLOW CONDITION. FINAL ALIGNMENT IS SUBJECT TO THE APPROVAL OF THE HAMILTON LAKE ASSOCIATION.
3. THE MINIMUM EMBANKMENT LENGTH SHALL BE 8 FEET FROM THE TOP OF DRAINAGE OR ORANGE. THE DESIGN ASSUMES EL. 81.
4. THE FINAL ALIGNMENT OF THE STRUCTURE SHALL BE ADJUSTED TO MINIMIZE INTERFERENCE FROM BURIED LIGERS WHICH MAY IMPED DRAINAGE OF HALLSNEY DITCH.
5. THE AERIAL SURVEY PHOTO CONTROL WAS PROVIDED BY A LOCATION ON ROAD 400 E WHERE IT CROSSED OVER BLACK CREEK. THE LOCATION WAS ON THE CENTERLINE OF THE ROAD PERPENDICULAR TO THE NORTH BRIDGE END WALL LOCATED ON THE EAST SIDE OF THE ROAD.

### DRAWING INDEX

SHEET NO.	DRAWING TITLE
15087-01	COVER / GENERAL NOTES
15087-02	SEDIMENT CONTROL STRUCTURE

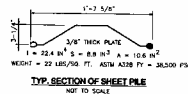
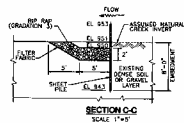
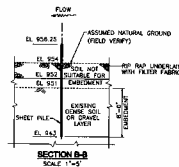
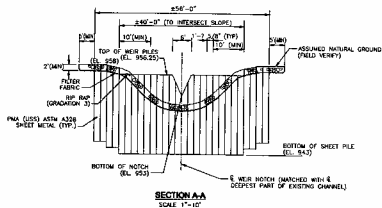
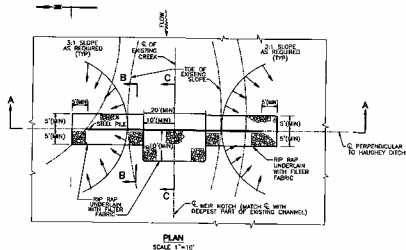


WEIR LOCATION MAP

**HARZA** ENGINEERING COMPANY

WATER & ENVIRONMENT

SEARS TOWER • 233 South Wacker Drive • Chicago, Illinois 60606-8392 • Tel: (312) 831-3800 • Fax: (312) 831-3976



APPROVED	ENGINEER'S SEAL
DESIGN	REVIEWED
CHECK	CHECK
DESIGN	DESIGN
DESIGN	DESIGN
DESIGN	DESIGN

REV.	DATE	DESCRIPTION	BY	CHKD	APPD	CHARGE	DATE	PROJECT NUMBER
1	01/10/01	CHARGE	ELANDS	15687-02				

HAMILTON LAKE ASSOCIATION, INC.  
HAMILTON, INDIANA

HAMILTON LAKE WETLAND ENHANCEMENT PROJECT

SEDIMENT TRAP  
PLAN AND SECTION

HARZA ENGINEERING COMPANY  
WETLAND ENHANCEMENT

CHARGE, ELANDS

DATE, 01/10/01

PROJECT NUMBER, 15687-02